The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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F. Brocq's Apparatus for Determination of Water Held in Suspension by Steam.

The apparatus shown in elevation and section by the accompanying cuts, is based on the principle that a vapor in contact with the liquid from which it is generated has a constant pressure or tension as long as the temperature remains constant, and a certain fixed value, independent of changes of volume, occupied by the mixture of steam and water. What takes place during such changes is well known. An increase of volume causes the evaporation of a certain quantity of liquid, and if the process is sufficiently slow to allow the surfaces of the receiver to give off the necessary quantity of heat, there will be neither a decrease of temperature nor a decrease of tension. But if by an expansion of volume when there is no excess of liquid present, and the steam is at its maximum tension corresponding to the temperature indicated, every additional increase of volume will cause a fall of temperature.

This change having been determined, the increase of volume produced by it in the receiver to obtain this result evidently represents the volume, at the temperature and tension of the mixture, of the steam holding this water in suspension. The solution of the problem, then, consists of finding the relation between the weight of the water and that of saturated steam holding it in suspension. Or the temperatures and tensions of the volumes of vapor compared remaining constant, the relation of weights will be the same as that of the volumes, which can be readily determined by this apparatus.

In principle, the question reduces itself to take a known volume of vapor and expand it until a change of tension is just noticeable. At that instant the relation between the increased volume and the original volume of the mixture must be determined.

The apparatus is composed of a cast outer vessel, into which the vapor enters through a flanged pipe, A, and escapes from it by a second similar pipe, B. This box, or vessel, has in its upper side a large rectangular opening, closed by means of a cast plate, held in place by eight bolts. In the inner surface *a b*, Fig. 2, a second cylindrical vessel of bronze is secured by means of bolts and nuts. This latter vessel is the receiver of the mixture of vapor and water, having a known capacity, in which the steam and water may be readily inclosed at any desired instant.

The inner vessel, the axis of which coincides with that of the pipe A, has a vertical rectangular aperture in its end, of the same hight as the diameter of A, say 40 mm. (1½ inches), and a width of 12 mm. (scant ½ in.) Another similar opening is in the under side of the inner vessel at B, having the same dimensions. These two apertures may be closed simultaneously by slides, moved from the outside by the screw C, working through a stuffing box.

These openings must be closed absolutely simultaneously, for if the entrance remains open a greater length of time than the exit, the vapor will be compressed in the inner vessel, while if the reverse be the case, rarefaction or detention of the flow of vapor will result. In either case the vapor will not be strictly identical with the vapor circulating in the outer vessel.

In the receiver there are also two other openings, one of which, P, receives the stuffing box for a plunge, 25 mm. (63-64ths of an inch, or, say 1 inch) in diameter. The other is in the form of a recess, M, 36 mm. (17-16 inch) in diameter. It contains a box covered by a metal diaphragm, folded in rings, forming the sensitive member, the functions of which will be explained below. This piston plunger P, which penetrates the interior vessel or receiver, is a true cylinder, closed at the inner end, and having a nut at the other, in which works a screw, by means of which the plunger is given a longitudinal motion.

This screw, being accurately cut and of steel, is made the means of measuring the exact volume of the receiver, according to the distance it is run in or out during the experiments. It is held in place by a sleeve and collar, and passes through a stuffing-box R, carrying at the outer end a small hand-wheel, the number of revolutions of which determine the exact position of the plunger, and, consequently, the volume remaining within the receiver.

These are the essential features of the apparatus. The action is as described below: Over the diaphragm, represented by a wave line at M, Fig. 1, there is a square, shallow box of bronze, affording room for its motion when acted upon by minute changes of steam pressure. This box has a small channel parallel to the axis of the vessel, which at the ends makes a square turn and connects on both sides with the interior receiver. Through the middle of this box passes the end of a stop-cock, which is moved by a lever on the side of the vessel. In the present design the small channel is replaced by grooves cut in the cock, which allows free communication between the upper and lower sides of the diaphragm, producing equilibrium. A quarter revolution of the cock cuts off all connection between the two sides of the diaphragm, making it sensitive to any slight variation of pressure. A screw with very fine thread passes through the center of this stop-cock and is insulated by a glass tube, through which it passes, while the upper end has a wooden button, by which the screw can be adjusted to touch the diaphragm below. It is also connected with one pole of a battery, the other being in communication with the diaphragm and an annunciator.

The point of the screw is adjusted to barely touch the diaphragm, making electrical connection and setting in operation the annunciator, which the slightest deflection will stop. As small a motion as 1-30 mm. (.0013 of an inch) was found sufficient to open and close the circuit.

An ordinary manometer could not have been employed here, not being sufficiently sensitive to indicate such very minute variations of pressure. In this device the limit of sensitiveness may be varied by the substitution of thinner diaphragms, which will be so flexible that even the minutest differences of pressure will be recorded, fixing the instant of completion of the experiment.

To make a trial, the slides are withdrawn from the apertures of the receiver and the vapor is allowed to circulate until equilibrium and uniformity of temperature have been obtained. The apertures are then closed, and a volume of 125 cub. cm. (7.62 cubic inches) is inclosed in the receiver. Now the stop-cock is turned 90 degrees, to close communication between space above and below diaphragm, and, by turning the wooden button, the screw is run down and barely brought into contact with the diaphragm, starting the annunciator. The hand-wheel working the plunger is then moved, increasing the volume within the receiver. The pitch of the screw being 2.50 mm. (.098 of an inch), and area of piston 5 sq. cm. (1.96, or a fraction less than 2 inches), each revolution of the hand-wheel and screw will increase the volume in receiver by 1.25 cc. (.07 cubic inch) or 1-100th of the original volume. Consequently, the number of revolutions of screw until contact is broken will give the percentage of water contained in the original vapor. This apparatus is very valuable in determining accurately the relative value of receivers placed in different parts of steam generators, as well as the amount of priming in the latter themselves.

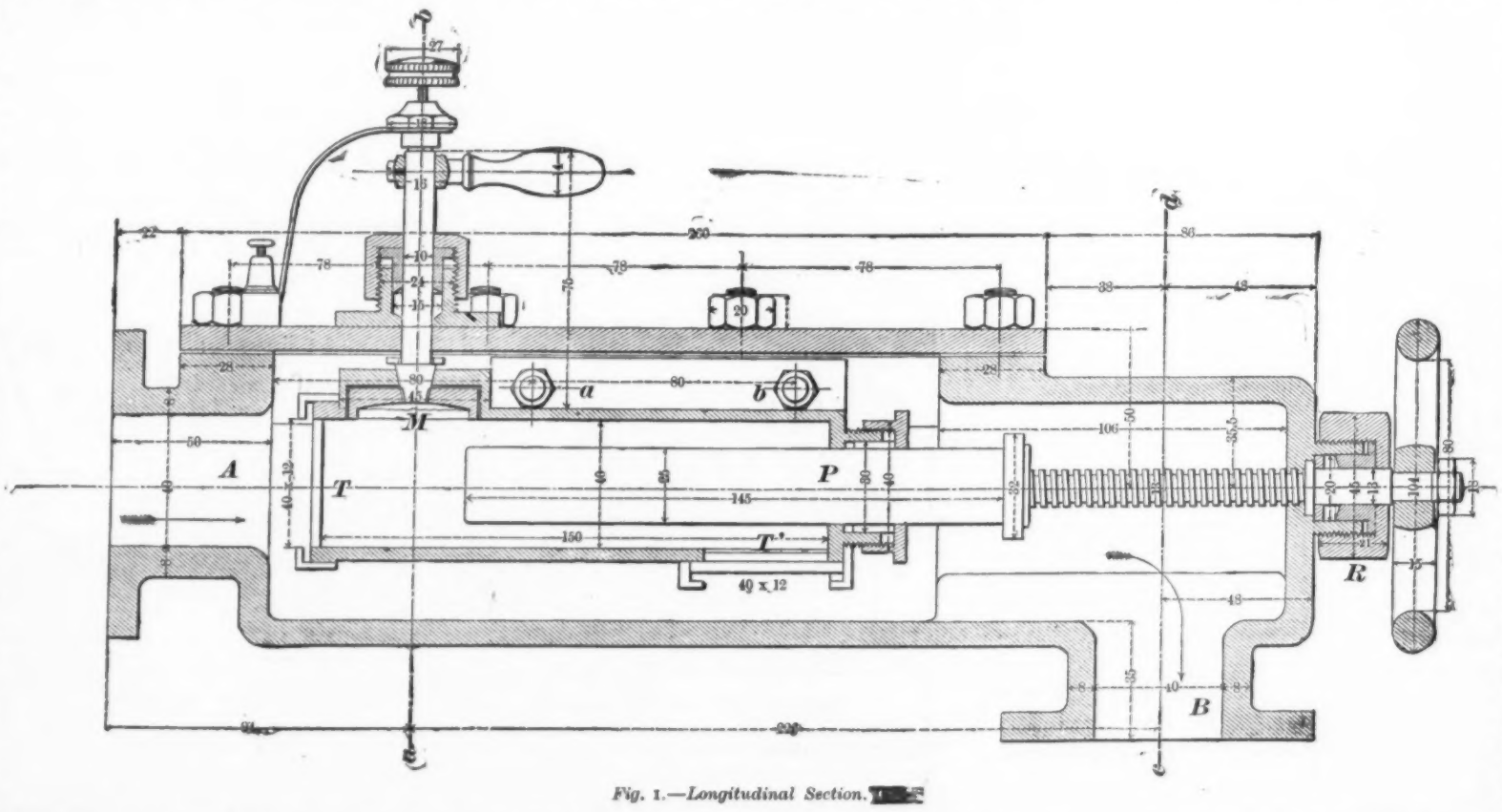

Fig. 1.—Longitudinal Section.

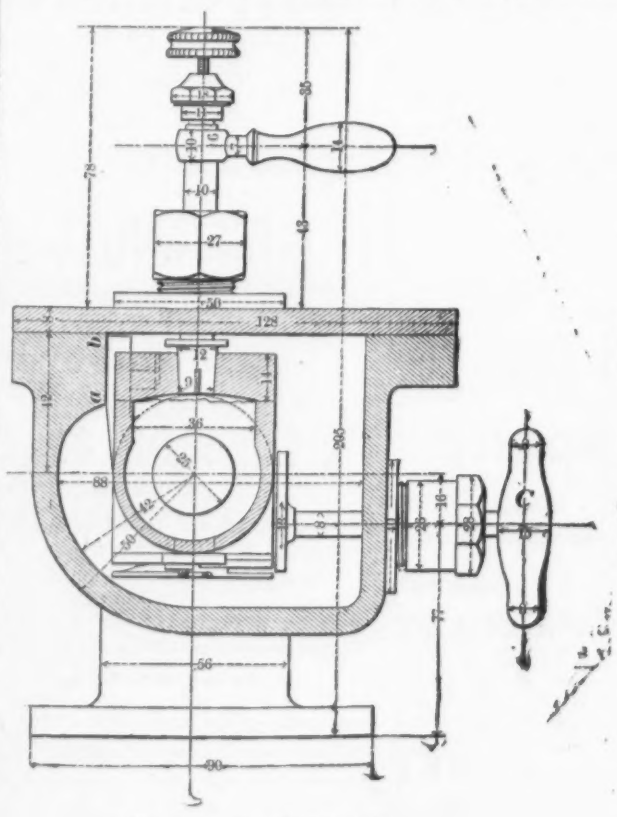

Fig. 2.—Section through A B.

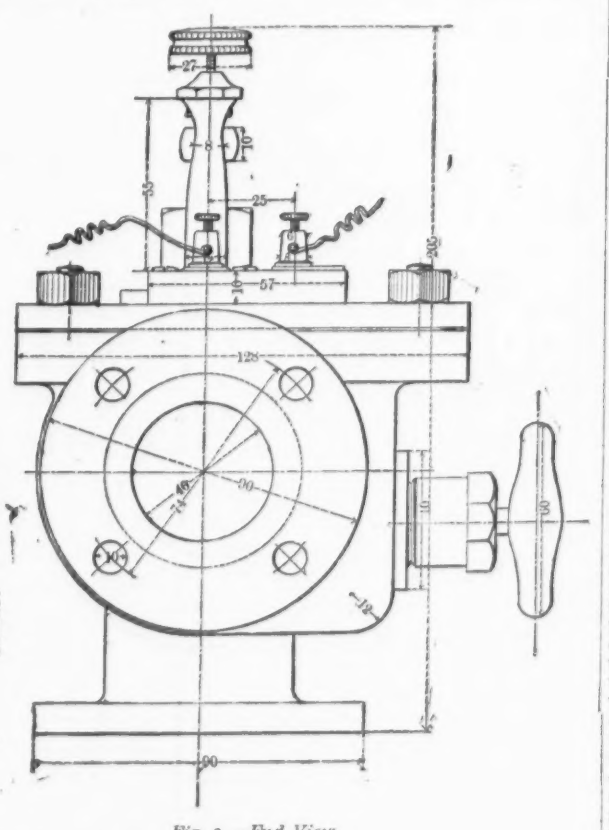

Fig. 3.—End View.

BROCQ'S APPARATUS FOR MEASURING WATER IN STEAM.

Retrospect of Mechanical Engineering Progress During the Last Fifty Years.

Sir F. J. Bramwell, on the 2d inst., before the Mechanical Section at the meeting of the British Association at York, delivered an address on "Some of the Developments of Mechanical Engineering during the last Half Century." He began by a reference to the steam engine used for manufacturing purposes in 1831, the steam for which was supplied from boilers which appeared to have been chosen rather for the convenience of the sweeps, who periodically went through the flues to remove the soot, than for the purpose of withstanding any internal pressure of steam. The consequence was that they were only worked with steam up to 3½ or 5-pound pressure above atmosphere. At the present time the boilers were almost invariably cylindrical, and it was due to the late Sir Wm. Fairbairn, once the president of the British Association, that the danger which for some years prevailed of the collapse of the cylindrical fire-flues was entirely removed. Boilers of that kind were well calculated to furnish steam for 40-pound pressure above atmosphere. Speaking of the condenser, he remarked that it was a fact that the evaporative condenser, which had been invented for nearly the whole period the association had existed, was still not generally known, and was very rarely used, even where there was not sufficient water. They either saw engines worked without condensers at all, or water works water used at a great cost, and to the detriment of the consumers, who wanted such water for ordinary purposes.

Turning to steam navigation, although in 1831 there were a number of paddle steamers running on some of the English rivers and across the Channel, yet there were no ocean steamers properly so-called, and no steam vessels for warlike purposes. In 1881 the vessels were either of iron or steel, and he thought it would not be long before iron disappeared, giving place entirely to the metal which, he thought, was properly called steel. The boilers were now of enormous strength, were made with every possible care, and carried from 80 to 100 pounds pressure per square inch. The speed was very nearly 15 knots, instead of eight or nine knots an hour, and the steam vessel was now the accepted vessel of war. Coming to the engines used for railway purposes, he said that in 1831 the Manchester and Liverpool Railway had just been opened, although there was no doubt that the 300 members who then came to York did so by means of the stage-coach. In 1881 the railways were every where, and the speed of the trains, instead of being about 20 miles an hour, was now from 50 to 60 miles, and in spite of this increased speed railway accidents had diminished until out of 4,000,000 traveling there was only one death from causes over which the traveler had no control. This, no doubt, was largely due to the block system, rendered possible by the electric telegraph, and to an effective interlocking system of points and signals, making it impossible for a man to give an unsafe signal. Other means of safety were to be found in the continuous automatic brakes and the use of weldless tires. At a meeting of the association many years ago at Birmingham, he read a paper upon weldless tires, in which he ventured to prophesy that in 10 ten years' time there would not be a welded tire known. That was one of the few prophecies that had been fulfilled. At the same time he laid before the meetings plans and suggestions for making the cylinders and boilers equally without welding. That was hardly the case at the present time, but he was sure that in 20 years such a thing as a longitudinal seam of rivets in a boiler would be unknown. There was no reason why boilers could not be made in weldless rings just as well as the weldless tires. Sir Frederick next referred to the various motors for the transmission of power in use in 1831, as compared with those in use now, speaking particularly of the use of hydraulic power which the president had introduced with such great success. There was no doubt that the transmission of power by hydraulics had been of the greatest possible use. It had enabled work to be done which could not be done before, such as the raising of enormous weights wherever required. In addition to this there was the mode of transmitting power by gas, which seemed to indicate a very important future for gas engines. He believed it probable that in the future we should do away with the steam engine; and although the Mechanical Science Section might look with regret upon it as a thing of the past, yet he doubted whether those who met there 50 years hence would speak of it as anything other than a curiosity. He did not wish to touch at any length on the transmission of power electrically, but the president did not tell them on the previous day what he himself had done in this direction. Many of them might know that Sir William had made use of a fall of water about a mile from his house to work a dynamo machine for the purpose of illumination. When he was last Sir William's guest his mansion was lighted by the arc light, but he had since replaced it by the incandescent lamp, which was more applicable for domestic purposes, with the greatest possible success. Nothing could have seemed more improbable 50 years ago than that the lighting of a house should be derived from a fall of water. Sir Frederick went on to speak of the improvements which had taken place in the manufacture of iron from steel, and remarked that among those who had done so much toward this improvement, no one deserves greater praise than Mr. Isaac Lowthian Bell, who had made iron manufacture a scientific operation. There had been little

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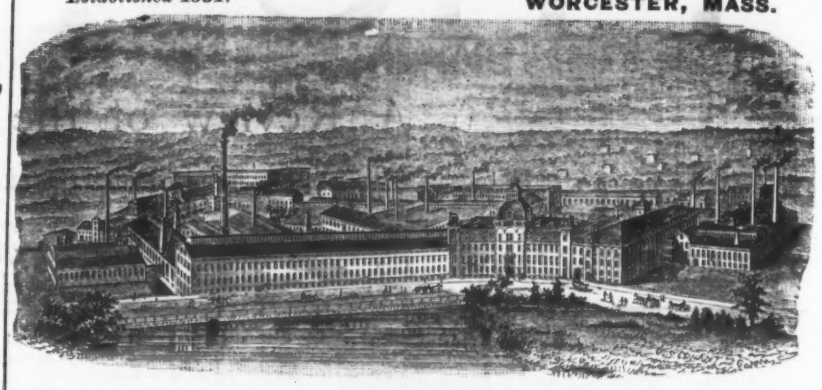
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change in the process of making iron by puddling, and he believed that puddled iron, except for the purposes of the country blacksmith, was rapidly becoming a thing of the past. He was told by Mr. Harrison, engineer to the North Eastern Railway Company, that some 18 months ago, when they asked for tenders for rails of iron and steel, many of the makers did not like to tender for iron, and such tenders as were sent were higher than the tenders for steel. In a very short time it would be practically impossible to get iron by the puddling process for many of the purposes for which some years ago it was used. Adverting to the much wider use of iron in the construction of bridges now compared with 1831, he stated that the improvement in the manufacture of steel had rendered possible the Forth Bridge, the designs for which were now completed, with spans of one-third of a mile in length. He believed that upward of 2000 tons of steel would be used in the construction of the bridge for the sole purpose of resisting the wind pressure, which would not be used had such pressure not been taken into account.

Having pointed out the improvement made in tools and the many addtions made to their number during the past 50 years, and referred to the improved domestic appliances in use, as instanced by the sewing machine, of which nothing was known in 1831, Sir Frederick spoke of the improvements in agricultural machinery. In 1831 there were thrashing machines; double plows, and even multiple plows, had been tried and abandoned. Reaping machines had also been experimented upon and abandoned, but sowing machines, clod crushers and horse rakes were in use. As to the position of agricultural machinery at present, he did not know a better machine than the agricultural portable engine. Every part was beautifully made, and the economy in its use was very great. The last subject for reference was printing machinery as applied to newspapers. In 1831 there was a steam press sending out a few copies per hour, and doing that upon detached sheets; but by the Walter press, the process of stereotyping and *papier maché*, the wisdom of our senators delivered at 3 in the morning could be circulated throughout the country by the newspaper trains leaving London at 5 o'clock. He had purposely omitted, in this review, the telegraph, the improvements in weaving and the milling of corn into flour. Although he agreed with the president that they should not be content to look back and see the progress that had been made in a rest-and-be-thankful spirit, yet it might be well to have brought before the section, even in this cursory manner, some notice of that progress, that it might stimulate those present and those who were to follow them, so that it might well be said that giants lived in the days between 1831 and 1881; but they were a puny race who lived after them, for they could not improve upon what their fathers had done.

The "Fair Trade" Movement.

Our English correspondent this week gives us some interesting facts concerning the "Fair Trade" movement, which seems to be gaining ground. At all events, its advocates are making a great deal of noise and attracting a good deal of attention. The following, which appears as an advertisement in the leading English newspapers, will give our readers an idea of the aims and character of the movement:

NATIONAL FAIR TRADE LEAGUE.

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Chairman of the Executive Committee, Sampson S. Lloyd, late President of the Association of Chambers of Commerce of the United Kingdom.

Bankers, Union Bank of London, Charing Cross.

Central offices, 23 Cockspur street, Charing Cross, London, S. W.

MEANING AND PURPOSES.

Convinced of the practical failure of the present system of free trade (so called), which consists of the free admission into the United Kingdom of foreign manufactures and food products, notwithstanding the exclusion of British manufactures from foreign States through the operation of heavy and, in some instances, prohibitive tariffs;

Convinced that this refusal of foreign nations to receive British manufactures in exchange for our purchases from them is working most injuriously to the welfare and prosperity of the nation, and endangering the steady employment, fair wages and future well-being of our working classes;

This league is formed to promote, by every means at its command, an extension of trade with all countries, and especially with our colonies and dependencies, prepared to deal with the United Kingdom upon the principle of reasonably free interchange, and to agitate for such fiscal readjustments as shall prevent the products of foreign States which refuse to deal with Great Britain in fair trade from unduly competing with the products of home labor.

POLICY ADVOCATED.

The special policy advocated by the league is fully set forth in a programme issued from the central office (which may be obtained on application to the Hon. Secretary), together with a *resumé* of the reasons or arguments urged in its favor.

Broadly, and as only possible within the limits of a newspaper advertisement, this policy advocates:

(a) The abandonment of entanglements in the shape of long-enduring commercial treaties, which prevent us adopting such fiscal arrangements as the action of foreign nations may from time to time render needful, in the general interests of our empire.

(b) It insists upon the encouragement of our home industries by the free importation of raw materials needed by the labor interests of our manufacturing centers, and the levying of import duties upon the manufactures of foreign States which refuse to receive the products of British labor in fair exchange.

(c) It also aims at the full development of the resources of our empire, by the imposition of a moderate tax upon food from foreign States refusing to trade with us on equal terms, but admitting it free from every part of our own empire, such policy affording—

(1) A measure of justice to our own heavily-burdened agricultural industry, and

(2) Transferring the great food-growing industries which we employ (outside our own islands) from protective nations, which refuse to give us their custom in return, to our colonies and dependencies—these latter being already our best customers, and the only parts of the world that do not show a gradually diminishing area of trade open to the British artisan.

Whatever revenue may be derivable from the adoption of this policy the league considers should be devoted to the reduction of local taxation, urban and rural alike.

CONSULTATIVE COUNCIL.

(Those marked * form the first Executive Committee, with power to add to their number.)

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Thomas Ambler, J. P., Atlas Mills, Bradford.
John R. Armitage, J. P., dyer, Bradford.
Edward Atkinson (Atkinson Bros.) Sheffield.
Jno. Furniss Atkinson, Milton Works, Sheffield.
William Barwell, nut and bolt manufacturer, Birmingham.
George Beard (councillor), Birmingham.
Wm. F. Beardshaw, Baltic Steel Works, Sheffield.
James Beazley (Beazley & Son), shipowner, Liverpool.
Henry S. Bennett, farmer, Heaton House, Boroughbridge.
Thomas Binns, manufacturer, Rissley Hall, Ripon.
Fredk. Blood, hardware factor, 42 Charlotte street, Birmingham.
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John Broadbent (Broadbent & Sons), merchant, Bradford.
Francis Broomhall, tea importer, Wolverhampton and Birmingham.
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T. Craig Brown, Yarrow Mill, Selkirk.
William Brown, J. P., Selkirk.
John M. Bruce (Paterson, Laing & Bruce), Australian Avenue, E. C.
Henry Bruen, Rt. Hon., J. P., D. L., Oak Park, Carlow.
Chas. James Bury, J. P., St. Leonards, Nazing, Essex.
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Digby Cayley, Jr., Brompton, Yorkshire.
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John Close, The Hollies, Dringhouses, York.
A. H. Cochrane, J. P., Aldwark Manor, Eastingwold, Yorkshire.
Henry Coke (David Sassoon & Co.), Rumford street, Liverpool.
Chas. Wm. Collis, Registrar Stourbridge County Court, Stourbridge.
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Benjamin Davis, J. P., Adlington Hall, Adlington, Lancashire.
Arthur Duncombe, J. P., South Cliffs, Scarborough.
Edward Ecroyd, Edgend, near Burnley.
James Eckersley, Burnt House, Adlington, Lancashire.
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*Arthur Pryor, J. P., D. L., Hylands, Chelmsford.
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N. B.—Further names will be added from time to time.

CONSTITUTION OF LEAGUE.

1. The league is composed of members and branch members, members paying an annual subscription of 1 guinea, branch members paying 1/ per annum to the central fund in addition to such local subscription as may be determined by each branch.

2. The general government of the league is vested in a council formed of those contributing substantially to its funds, or capable of rendering exceptional service in the prosecution of its objects, and an executive committee appointed to administer its affairs and generally to conduct its business.

BRANCHES.

The committee is prepared to establish branches in every part of the kingdom, and will be happy to receive communications on this subject from gentlemen qualified by their convictions and experience to act as correspondents or local secretaries in furthering the objects of the league.

Branches are self-governing, though affiliated to the parent league. In exchange for that affiliation and the contribution of 1/ per member per annum to the central fund, each branch is entitled to bear the league's name, and to have the benefit of the lecturers chosen and the printed matter issued by the league.

Further particulars as to the foundation, objects and mode of working of the National Fair Trade League may be received on application to the honorable secretary.

SPECIAL NOTICES.

Members.—The committee appeals for the co-operation, as members (annual subscription, 1 guinea), of all throughout the United Kingdom who desire a change in our one-sided international commercial policy.

Donation Fund.—Further pecuniary help (in aid of which large sums are already subscribed by members of the council and committee) is also earnestly invited from all members whose means may permit it, by way of donations, either in one sum or in five annual payments. By this means it is desired to raise an income of at least £10,000 a year for five years, so as to adequately aid the ordinary membership subscriptions, and to efficiently fight the battle of justice to British industry.

Personal Assistance Invited.—Employers of labor, managers of works, labor foremen and all others entitled to speak on behalf of the feeling of the working classes of their districts, are respectfully requested to communicate with the honorable secretary. Information is especially invited as to the existence of any local movements having for their object an inquiry into the action of our present fiscal system, or into the causes of the gradually diminishing area of home labor open to the British workingman.

Special Information Wanted.—The committee desires to obtain from workingmen themselves technical and detailed information, showing how their individual trades or industries are affected for good or evil by one-sided free trade, and to what extent they and their fellow workmen find themselves benefited or suffering in consequence. The committee is prepared to pay for the trouble and expense incurred in giving such information, providing the scale of remuneration is in each case agreed upon in advance and in writing.

Assistance Offered by the League.—The committee is prepared to afford all the information at its disposal, on fiscal topics generally, to societies or individuals applying for the same. Whenever it may be desired to have lectures or to hold local discussions for the ventilation of the principles of fair trade, the committee is also ready to supply lecturers and speakers who have made a special study of the question, and who are prepared to defend the interests of British labor against the protection of foreign labor in our markets at home, and against the unfair exclusion of the products of British labor in markets abroad.

N. B.—Information is requested from members or other correspondents of the league as to lectures or discussions that may be announced, either under the auspices of the Cobden Club or of any advocates of our present one-sided free import system, so that arrangements may be made to give the locality an opportunity of hearing both sides of the question.

Men of all parties—landowners, millowners, farmers, manufacturers, traders and artisans, and all engaged in either agricultural or industrial pursuits throughout the United Kingdom are cordially invited to join this national movement.

The National Fair Trade League knows neither party nor class. Its sole objects are the permanent welfare of the country and the maintenance of the commercial prestige of the English name.

While the National Fair Trade League has many supporters in both Houses of Parliament, it has been deemed advisable not (as yet) to claim their open co-operation. The league emanates from the people, and by the people it desires to work. HAROLD GORE BROWNE, Hon. Sec.

National Fair Trade League, 23 Cockspur street, S. W.

Patents in Turkey and Liberia.—General patent laws have been lately passed and promulgated in Turkey and Liberia, in which countries inventors may now, for the first time, secure their new inventions. The Turkish patent law is substantially a copy of the French and German systems. Any person may take a patent on deposit of drawings and specifications. Longest term of the patent 15 years, annual tax about £4. The invention must be worked within two years from the date of the patent. The penalties for infringement and the proceedings are the same as in European countries. In Liberia the patentee must be the inventor, or must have lawfully acquired the invention from the inventor. Drawings and specifications must be furnished. The government fee is about £10. 10/. The proceedings are much the same as in taking an American patent. The invention must be worked within three years after the grant of the patent.

Messrs. Bickelhoupt Bros., manufacturers of metallic skylights, who for so many years have been doing business at 330 West Thirty seventh street, New York, have been compelled to seek more commodious quarters in order to meet the increasing demand for their goods. They have largely increased facilities at their new place of business, 215 West Thirty-seventh street, New York.

Electrical Curiosities.

The Paris correspondent of the London *Times* gives the following account of some of the novelties to be seen at the Electrical Exhibition:

Ever since M. Gramme introduced his beautiful machine for generating the electric current, his principle has been adopted in a host of other inventions. Shortly afterward a new value of the machine was found. I well remember, in 1875, returning from a prolonged absence from England, I had occasion to write to the late Prof. Clark Maxwell, and incidentally asked him what was the greatest discovery of late years. He replied that, in his opinion, the greatest discovery was "that a Gramme machine could be reversed"—*i. e.*, that when a current was passed through the machine it might be used to drive machinery. The belief of the Professor was shared by many others, and hundreds of people have been since then engaged in applying this new means of transmitting power to divers purposes. The Electric Exhibition contains a large number of these, many of which can even now be seen in action, but a complete notion of these applications cannot be gained until the steam engines, the source of nearly all the electricity to be used in the exhibition, are in a more advanced state. I will, however, attempt very shortly to give some idea of the most interesting examples in this department.

A great deal of popular curiosity will, doubtless, be excited by two thoroughly French toys on a large scale, both made by M. Trouvé. The first is the electric boat, which is a full-sized boat for three people, having attached to the near end of the rudder a screw driven by a small electro-motor. The screw passes through a void space in the rudder. The motor is fed by three large bichromate cells. The mode of attachment of the screw causes it to assist the rudder in turning the boat, so that M. Trouvé has been easily able to float round the artificial pond which surrounds the light-house in the center of the building, and to pass under the picturesque arches by which it is spanned at the rate of about a mile an hour.

The other is the electrically propelled balloon of M. Tissandier. It is an elongated balloon, three meters long and one and a third in diameter. It is filled with hydrogen, and has a screw at the rear, driven by an electro-motor designed by M. Trouvé. It can also carry a couple of the secondary cells of M. Planté. A wire is suspended across the building from one gallery to the other, and the balloon rises above this wire and travels along it when the current passes. A fin placed in front prevents it from swaying. But the motion is very slow, and at present the machine is little more than an electrical toy.

Still more interest will, however, be excited by the tramway car driven by electricity, the invention of Messrs. Siemens. In this tram car, which runs from a wooden station on the Place de la Concorde into the exhibition, the current is generated by a powerful dynamo machine within the building. It is then carried by wires mounted on strong posts, from which it is tapped by carriers on the car, whence it descends to beneath the center of the car. Here the current, passing through a dynamo machine, sets it in rotation, and by a chain connection this machine is geared to the axles of the wheels. The velocity of rotation is reduced to one-third by this gearing. The chain connections are all on one side in the case of both axles. There is also an arrangement supplied for taking the current directly from the rails, but it must be very rarely that such a means could be utilized on an ordinary tramway, and at present it is discarded. The appearance of the car is very handsome, and shows few external signs of the power which may be generated within it. Such a car might be fitted with the secondary batteries of M. Faure, which might be placed under the seats. The car would be then self-contained, and there would be no necessity for having either the aerial wire or the conduction through the rails. Such a self-contained car was actually constructed and tried in Paris some months ago, but serious difficulties were then encountered, which, however, I have reason to believe will soon be overcome, and then we shall have an opportunity of seeing a car running on a tramway and carrying its own electrical store of energy.

In the electric brake of M. Achard, applied to railway carriages, there are upon the axle of each pair of wheels two rings of iron, about 8 inches in diameter and 2 inches wide. Besides this, there is a second and independent axle with two rings 1 foot in diameter, facing the rings on the wheel axle. These rings, however, are the two extremities of a powerful electro-magnet, which can be excited by a coil of wire, the ends of which can be connected with the current generated in the locomotive by means of two pair of strong copper strings. So long as there is no current passing, the independent axle maintains a fixed position, and the brake is kept away from the wheels by strong spiral springs. So soon, however, as the current is allowed to pass the rings, the two ends of the independent axle are converted into magnetic poles, which attract the revolving rings on the axle of the wheel, from which they are separated by only one-eighth of an inch. The so-called residual force of the rings produces a rotary force on the poles of the electro-magnet. The independent axis revolves and winds up a chain which is connected by levers with the brake, so that in a short time a powerful force is applied. A simple form of variable resistances is supplied in the locomotive, so that the engine driver has merely to turn a wheel more or less to increase or diminish the power of the brake.

A most interesting application of electricity to motive power is seen in the plowing machines of the late M. Menier, exhibited by M. Félix, which do the work of about 18 horses. In these are employed a pair of the large form of Gramme machines, which were first made for them, but which have since become the usual form for Gramme motors. The ring armature has four poles, opposite which are the poles of the fixed magnets, each fed by two arms, giving somewhat the appearance of a square with all four sides prolonged each way, and inclosing a circle. All the eight arms are connected by an octagonal framework of a very solid form, forming part of the field magnets. This is undoubtedly the most compact form of Gramme machine which has been made. This machine is at one end of the electrical locomotive; at the other end is the gear for directing the motion of the whole engine forward or backward in the field to be plowed, or for stopping it and putting in action the machinery for winding up the large coil of wire rope, which coil is in the middle of the engine. The wheels are of course wide, like those of a traction engine, so as to be able to pass over plowed land. One of these engines being stationed at each end of the field, with a triple-shared reversible plow between them, the electric contact is made, the Gramme machine turns round and winds up the wire, and so draws the plowshare along. When the plow has reached the end of a furrow the engines advance a step by gearing the Gramme machines to the proper wheels, the plow is tilted so as to bring three other shares into action, and the engine at the other end of the field pulls it the reverse way.

The Course of the Tin Plate Market.

Messrs. H. T. Lockwood & Bro., of this city, have sent to this office a chart representing the fluctuations in tin plate from January, 1868, to the 1st of August of the present year. The chart has four lines running across it, two in black representing Melyn grade of charcoal tin and S T P grade of charcoal ternes, and two red lines representing Allaway's grade of charcoal tin and B V grade of coke tins. B V cokes, January, 1868, were worth $6.50 a box. Melyn grade charcoal tins at the same date were worth $8 a box. From these points as extremes, the lines commence a zig-zag course up and down the sheet, until they might be supposed to represent the profile of a mountain range with various peaks and lowlands indicated before and after the highest points are reached. The highest figures shown in the chart occur in April and May, 1872, when Melyn grade of charcoal tins reached the unprecedented figure of $13.75 per box, and B V grade of coke tins, $12.50 a box. In October, 1871, these same tins had sold at $8.78 and $8, respectively. The rise that took place in the early part of 1872, it will be seen, was very rapid and altogether unparalleled in the history of the metal trade. From April of that year prices were maintained with some degree of regularity until the commencement of the fall season, when a decline took place, the lowest figure being reached about the middle of December, Melyn grades at that time selling for $10.75 and B V cokes for $9. This was a turning point, a rise in prices again taking place, culminating in April, 1873, with Melyn grades at $12.50 a box. From this point the fall was gradual, with occasional variations, through the years '75, '76, '77, '78 and the first three-quarters of '79. In August and the first part of September, 1879, Melyn grades had been selling at $6.25 a box. Under the effect of the "boom" which set in about this time, a steady rise took place until these same tins sold, in January and February of the following year, at $10 a box. From this point the decline was rapid and regular, extending through the months of March, April, May and June. A rally of some 25¢ a box occurred in July and August. After this, the fall continued through September and October, the year closing with Melyn grades at $6 a box. The first half of 1881 has shown alternate rises and depressions, varying, however, scarcely more than 12½¢ a box, leaving the market at the close of the period a little below where it was at the opening of the year. A graphic presentation of the course of trade in any line gotten up in this manner, is always of great interest to the intelligent student of commercial affairs, and firms who prepare and issue charts of this kind take a sure course of keeping their houses before the public.

The Broadway Tunnel.—Opposition to the proposed tunnel under Broadway is strongly manifested by property owners on that thoroughfare. In addressing the commissioners appointed to hear objections, Mr. Albon Man, who represented the Lorillard estate, said that it was proposed to construct the road at a depth of 22 or 23 feet, with a width about 12 feet less than that of the street. There were to be two tunnels or viaducts. The building of the road would involve the changing of most of the sewer system of that part of the city, and it would also affect the gas and water service. The sewers on the east side, which are all drained now into the North Biver, would have to be drained into the East River. Then quicksand has been found under Broadway in many places. The foundations of many buildings in the street are only 10 or 12 feet deep, and the digging of a tunnel 23 feet in depth would endanger the safety of these buildings. Mr. Jaffray said that a company, to construct a tunnel of this kind, should have at least $10,000,000 capital, and he could not learn whether or not any large capitalists were interested in it. Then the construction of such a railroad would be an incalculable injury to the whole country, because it would block up the greatest thoroughfare in the metropolis for several years at least. Mr. Rice said that he was instructed by Judge Hilton to object absolutely to the scheme, because the construction of the tunnel would endanger the safety of many buildings, and because the company could not give any security to property owners for any injury it might do. He was told that none of its capital stock was paid in, and any bond it might give would be worthless. E. S. Jaffray, Albon Man, John C. Shaw, O. B. Potter and H. H. Rice were appointed a committee to recommend action to the property owners in Broadway. The commissioners will be asked to postpone their next meeting to give the committee an opportunity to investigate the matter, and to consult engineers as to the effect of the proposed tunnel.

Metallurgy in Prussia.—Out of 227 blast furnaces built in Prussia, 162 were in blast during 1879, against 163 during the preceding year. Of these, 130 were smelting with coke, 30 with charcoal, and two with

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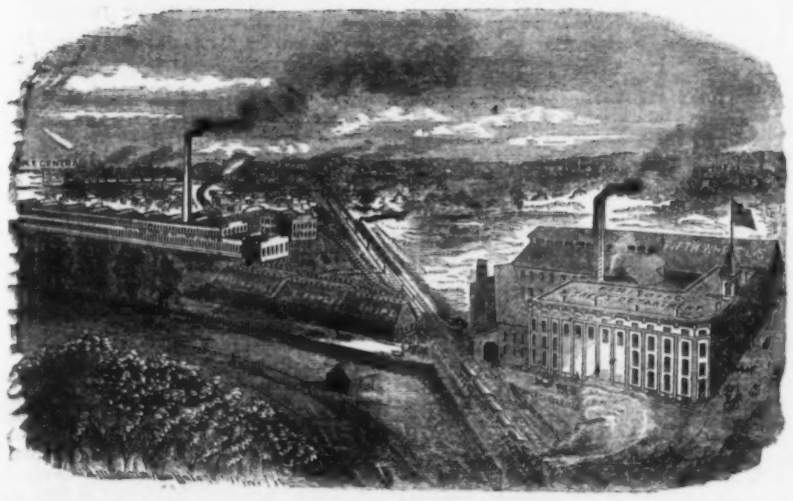

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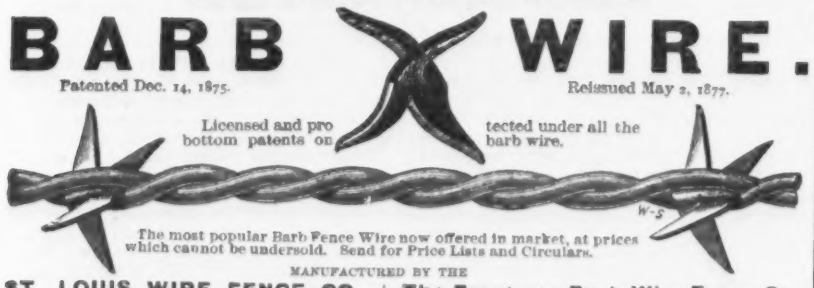

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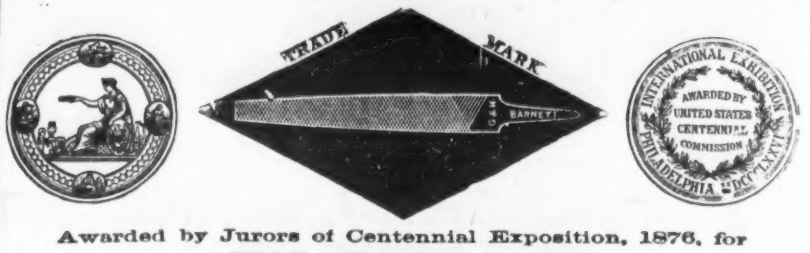

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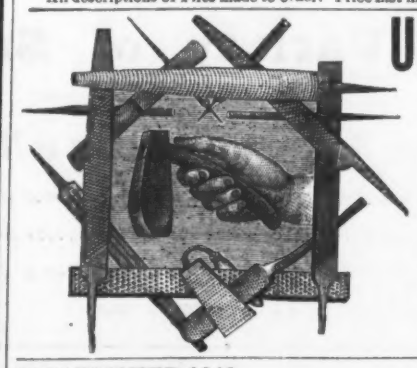

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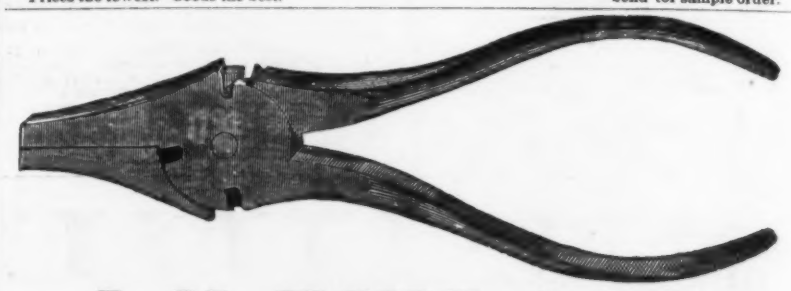

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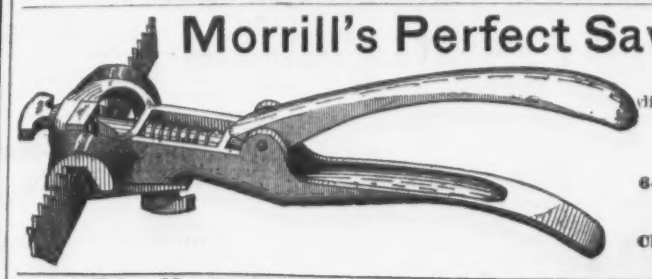

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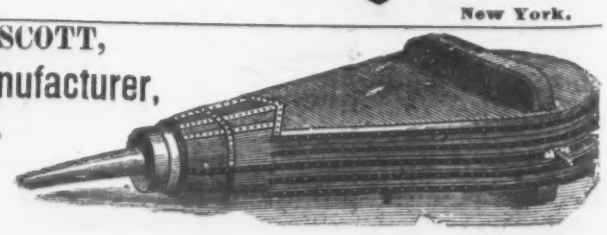

mixed fuel, which together give employment to 14,399 men. These furnaces produced 1,639,676 tons of pig in 1879, against 1,568,061 tons in 1878; 622 foundries turned out, with 912 cupolas, 304,612 tons of castings, against 277,190 tons during the preceding year; 277 mills, having 1348 puddling furnaces at work, make 1,008,020 tons of rolled wrought iron in 1879, against 975,136 tons in 1878. There were in operation 31 Bessemer converters, 23 open-hearth furnaces, 147 crucibles, and seven cement-steel furnaces during 1879, which together produced 469,096 tons of manufactures of steel, against 462,506 tons in the preceding year. The production of spelter amounted to 96,484 tons in 1879, and to 94,637 tons in 1878. Lead, including litharge, was produced to the extent of 97,156 tons in 1879, and 78,369 tons in 1878. The production of copper was 10,165 tons in 1879, and 6339 tons in 1878. The total number of men employed in the metallurgical works of Prussia in 1879 was 102,729.

The Chemistry of Spiegeleisen Production.

On this subject, Prof. A. Ledebur, of Freiberg, says: Toward the end of the second decade of this century the peculiar species of cast iron called "spiegeleisen" began to be produced systematically. Although this material had been made occasionally during the last century, it was not until the demand for large quantities of wrought iron for railroad purposes created a rapid developement of the puddling processes, that the value of this material rose considerably especially after the discovery of the importance of an addition of it in the manufacture of steel and homogeneous iron by the puddling furnace, had been made. As long as spiegeleisen was made by means of wood charcoal, running off a slag containing large quantities of silica acid, it rarely showed more than 10 per cent. Mn. However, after furnacemen had got over their notion that charcoal was absolutely necessary in the process, and had adopted the use of coke, thereby requiring the running of a slag which was more basic, it was an easy matter for that reason, and on account of the higher temperature of the hearth, to obtain a more thorough reduction of the ore and a spiegeleisen containing 20 per cent. Mn. But this increase of percentage in Mn enhanced the cost of production considerably, and as long as the material was used principally in puddling furnaces, there was no strong inducement to produce a spiegeleisen containing a larger percentage of Mn. With the adoption and development of the Bessemer and Martin processes for making steel, which required the addition of a rich manganese iron, after complete decarbonization of the cast iron, to reduce the free oxide of iron, conditions were considerably changed. But as this process requires a larger quantity of spiegeleisen, in the inverse proportion of the percentage of Mn contained in it, the relative proportion of carbon added increasing at the same rate, it soon became necessary to make use of an alloy of manganese and iron very rich in Mn, when it was desirable to turn out a product low in carbon. At first this alloy was made altogether in crucibles, but under the stimulating influence of the depressing conditions existing in 1873, the problem of how to do the same in the blast furnace was soon solved, until now the spiegeleisen produced contains as much as 80 per cent. of Mn, and is rather an alloy of Mn and Fe, and could very appropriately be called a cast manganese, rather than spiegeleisen.

The general conditions necessary to obtain this rich product of manganese are: A strongly basic slag, high temperature above the hearth, copious supply of fuel and, naturally, a large excess of manganese ores, which must be larger in proportion to the composition of the required product, especially because so large a waste occurs in the slag, which always carries off a considerable amount of Mn. The external appearance of a spiegeleisen furnace in blast is, however, sufficient to indicate conditions of operation entirely different from those existing in the ordinary pig blast furnace. Not only is the temperature above the hearth much higher, but the boshes and upper part of the stack are quite hot, and the lining frequently attains a red heat, while the characteristic indication of a spiegel furnace is a huge mass of flame issuing from the mouth, wasting a large amount of heat. There are two principal causes producing these peculiarities of the spiegeleisen processes; the first is the difficulty of reducing and melting the manganese, and the second is the chemical relation of the ore to the carbonic oxide gases rising in the furnace.

Taking up the first cause, the difficulty of reducing and melting the manganese, it may be well to define the terms "easily reducible" and "non-reducible." If it be desirable to draw a line between the two terms, it must, in my estimation, be made to depend upon the chemical relation to or affinity for carbon in one case, and that for carbonic oxide in the other. Thus, only those metals which are not acted upon by carbonic oxide could be called non-reducible, while highly-heated carbon might still produce complete reduction. This affinity of carbon for oxygen combining to form carbonic oxide, constantly increasing with every temperature thus far attained, makes it our most valuable reducing agent for non-reducible metallic oxides. The reason why such substances as potassium and sodium carbonate, manganese peroxide and other metallic oxides, which are non-reducible at low temperatures, can yet be reduced by carbon when brought to a state of incandescence, must certainly be looked for in the fact that carbon at that temperature possesses a greater affinity for oxygen than either of the other metals. It is hardly to be doubted that this oxidation is largely assisted by the well-established loss of affinity which other metals sustain when subjected to very high temperatures. Carbonic oxide, however, shows a similar affinity for oxygen, increasing with the rise of temperature, and, although it begins to reduce many metallic oxides, and especially oxides of iron, at a much lower temperature than carbon is found to do, its value as a reducing agent soon disappears, as a point is reached when, by an augmentation of temperature, its affinity for oxygen is not increased, but actually reduced. The reason for this occurrence can readily be traced to the behavior of the carbonic acid gas produced by the combustion of the carbonic oxide. The latter acts upon metals easily in proportion to the readiness with which they oxidize and the higher the temperature, and is dissociated at that point when carbon attains its affinity for oxygen. Manganese is one of the non-reducible metals, for its lowest oxide, manganous oxide, can only be reduced by means of incandescent carbon, which constitutes a principal difference between it and iron ore. These are acted upon by carbonic oxide at a temperature even less than red heat, and the attention of the ironmaster is principally devoted to an extension of this indirect reduction, so as to leave but very little oxide of iron when the slag begins to collect, as this would dissolve all of it. The reason for this effort is to be found in the relative economy of fuel and reducing agent used in direct and indirect reduction. In the latter process, carbonic oxide, formed at the mouth of the tuyeres by the oxygen from the air of the blast, is the reducing agent.

1 kg. of C burnt with 4·3 kg. of atmospheric air producing 7·3 kg. CO, develops	2472 h. u.
7·3 kg. of CO used in reduction of ore and thereby changed into 11·3 kg. CO^2, develops by combustion	5600 h. u.
For the fusion of the iron ore which gave up the 4·3 kg. O used in combustion of CO, requires about 4·3 × 4200 =	5600 h. u.

i. e., the process of indirect reduction abstracts no heat from nor adds to the other processes of the furnaces, so that 2470 heat units developed by combustion of O, may be devoted to the fusion of the pure metal and slag.

In the direct reduction by C we have the following conditions:

1 kg. C and 4·3 kg. O taken from the ore when entering into combustion develop	2470 h. u.
To reduce this ore which supplies the O	5600 h. u.
are required, which makes a heat consumption of	3130 h. u.

From this we see that by the latter process there is a loss of 5600 heat units per kg. of C used, which must be replaced by the addition of a sufficient quantity of fuel. This also explains the rapid cooling down of the iron blast furnace as soon as a more rapid smelting or higher temperature, or other causes, increase the direct reduction. This condition of affairs in a manganese furnace explains the necessarily enormous consumption of fuel in it.

It is customary to assume that the smelting of manganous oxide is equal to that necessary to reduce ferrous oxide. It is, however, rather larger than smaller. Another difficulty arises from the fact that alloys of manganese are less fusible the greater the percentage of manganese contained in them, and, as a consequence, the quantity of heat necessary in the furnace is not only larger, but the temperature must also be higher than in an iron furnace. It is hardly necessary to say how satisfactory the results obtained in this direction have been by the application of hard coke and very high temperature of blast.

The other essential difference between a manganese and an iron furnace is produced by the relation of the manganese ores to the carbonic oxide gas rising in the furnace. Pyrolusite, or MnO_2, is the ore which is generally used in furnaces.

The lowest oxide of manganese, or MnO, can only be reduced by incandescent C, while all higher oxides readily part with some of their oxygen to combine with carbonic oxide, and, in consequence of the temperature used, are converted into Mn_2O_3, Mn_3O_4 and MnO, the latter, however, changing rapidly into Mn_3O_4 on coming in contact with air.

As many of the reactions which these higher oxides undergo have never been determined with sufficient thoroughness to explain many conditions which obtain in the processes of the manganese blast furnaces, several experiments are here given, which may throw some light on the subject.

The material used was pyrolusite, containing 81.97 per cent. MnO_2 (or 51.82 per cent. Mn), 5.03 per cent. Fe_2O_3, 2.79 per cent. water, and the remainder principally H_4O_4Si or silicic acid. With this composition of ore the manganic oxide gave up its O in about the following manner: While changing to Mn_2O_3, 7.54 per cent.; to Mn_3O_4, 10.05 per cent.; to MnO, 15.07 per cent.; to which must be added the O derived from Fe_2O_3, supposing a complete reduction of iron to the metallic state, which was, however, hardly ever realized in the experiments, or 1.50 per cent. O.

In these tests the ore was weighed in a closed glass, weighing bottle before and after the action of carbonic oxide gas, while the weight of water evaporated was determined by calcium tubes; and the weight of oxygen consumed was found by taking the difference in weights, having due regard for water emitted. The carbonic oxide gas was, of course, carefully dried, before passing it through the tube containing the ore, in a small vessel. The temperatures used during the tests were compared by introducing chips of tin, zinc and lead into the tube. A large number of tests gave the following average results:

1. The action of pure carbonic oxide gas on the ore at a temperature but little above 200° C., produced a sudden glowing of the ore, beginning at one end of the heap and running through to the other, and then ceasing. The ore, which had previously been black, had assumed a deep reddish brown; 9.4 per cent. of oxygen was abstracted, showing a conversion partly to Mn_3O_4 and partly to Mn_2O_3. The entire test occupied about 30 minutes, although the reduction was effected in a few seconds.

2. Raising the temperature to about 400° C., and passing carbonic-oxide gas over it for about one hour, 13.64 per cent. of O disappeared. Even assuming that the iron oxide present had been reduced to the metallic state, the amount of O withdrawn was more than sufficient to have changed the ore to Mn_3O_4, and it must have been at least partially changed to MnO. Upon exposure to the atmosphere the weight increased rap-

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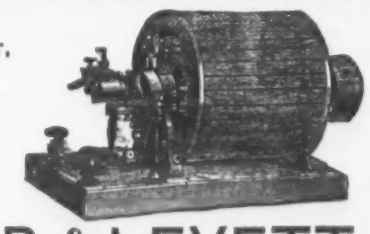

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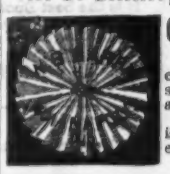

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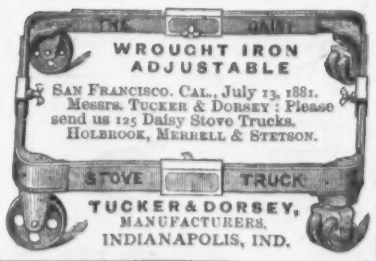

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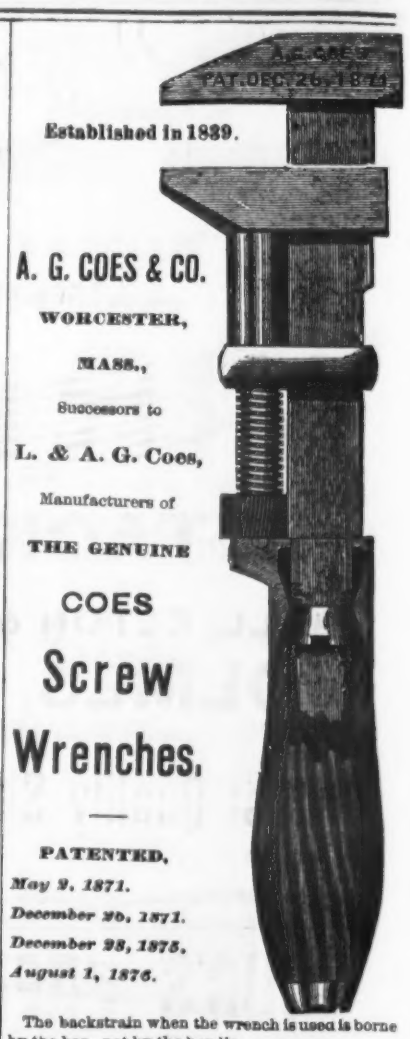

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idly, although the limit of increase was not determined in this case.

3. Using a gas obtained by passing atmospheric air over charcoal at a low red heat, containing about 70 per cent. N, 7 per cent. CO_2, 23 per cent. CO, the peculiar glowing mentioned in No. 1 again appeared, but not so plainly as before. The whole reaction was slower and required a higher temperature (300° to 350° C.) Several tests made at temperatures running up to 440° C., indicated a more rapid completion of the reaction. After keeping the temperature at from 350° to 400° C. (less than melting point of zinc), 9 per cent. of O was lost; after two hours at 400 degrees, 11.5 per cent., and, finally, after four hours, 11.8 per cent. O was lost. In dry air (over sulphuric acid) the weight of the heated ore increased rapidly, but remained stationary on reaching a loss of O equal to 10.7 per cent., or a total loss during last trial of 1.1 per cent. O.

4. On heating the ore in a current of air for about two hours in the highest temperature to be obtained by a Muencke combustion oven, or about 600° C., 4.1 per cent. of O was given off, while the color changed but slightly.

In the lower part of a manganese furnace there exists a gas mixture which contains more carbonic oxide than that used in No. 3, for in addition to the carbonic oxide produced by combustion of fuel in the air blown in, it also contains that quantity of gas produced by the direct reduction of the ore by the fuel. All ores, gradually settling down in the furnace, come in contact with this rising current of gas, and are gradually reduced to Mn_2O_4, and finally to MnO. In itself this action would be very favorable for the processes in the furnace, but it causes a considerable generation of heat, and this constitutes an essential difference from the iron blast furnace, which is almost entirely absorbed by roasting the ore, as demonstrated above by figures. According to Prof. Thomson, the heat required to resolve MnO_2 into MnO + O, amounts to 21511 h. u. for every atom (16 parts by weight), or for each part 1344 h. u. One part of oxygen, uniting 7-4 parts by weight of carbonic oxide gas, develops 4205 h. u.; the net gain of heat in that process of reduction, therefore, amounts to 4205 — 1344 = 2861 heat units, and consequently more than when coal enters into combustion with the same amount of oxygen before the tuyeres in a blast furnace. The consequent increment of temperature must also be larger than that produced when air is used, as the oxygen from the ore is not mixed with a considerable proportion of nitrogen, which is the case with atmospheric oxygen. The glowing of the ore in experiment No. 1 is ample proof of the increase of temperature when manganese ores are subjected to the action of carbonic oxide gas.

The legitimate desire of the ironmaster to run his furnace with cool head and warm foot, meets with two serious obstacles in the working of the manganese blast furnace—the large consumption of heat at the hearth requisite for direct reduction of the manganous oxide, and the above-mentioned development of high temperatures in the upper part of stack. The first difficulty may be battled with successfully by introducing the blast at very high temperature by using a compact fuel, and plenty of it. The second one has not yet been overcome, which is shown by the huge flames issuing from all manganese furnaces at the present day, with little prospect of their utilization, as any device to collect the gases would soon be destroyed. At the same time it must not be forgotton that this is not such a serious difficulty with a manganese blast furnace, as in it the ores must be reduced by incandescent coal. In an iron blast furnace this would, however, increase the direct reduction, and, consequently, a large consumption of fuel. Still, it would be very beneficial to avoid this high temperature in the upper part of a stack of a manganese furnace, as it would facilitate the working considerably. Charging the furnace would be easier, repairs would not be so frequent, and the waste gases could be utilized in many ways. Besides this, greater economy in coal consumption would ensue, as indirect reduction of iron ores admixed would be increased, which at present cake too readily; moreover, that part of the fuel which now only acts upon the carbonic acid in the rising current of mixed gases, being now a complete waste, could be otherwise retained in the furnace, to be utilized in its lower part.

As the principal cause of this high heat lies in the fact that manganese ores rich in oxygen are charged into the stack, a removal of its cause, *i. e.*, a conversion of the manganic oxide into a red oxide, would produce the desired effect, lower the temperature and reduce the consumption of fuel. Simply heating or roasting ores would produce this desired conversion, but as a very high temperature, as shown by experiment No. 4, and considerable time would be required, it would be very expensive. A quicker and more economic process would be to bring a heated current of mixed air and carbonic oxide in contact with the heated ores. The furnace itself could furnish an ample supply for this purpose, and charging an ore not so rich in oxygen would develop waste gases containing more carbonic oxide gas than those from an ordinary blast furnace, and there would then be no obstacle in the way of collecting and carrying of these products of combustion.

There would always be a sufficient quantity of waste gases for the roasting and hot-blast ovens, as well as for the boilers. The construction of the roasting ovens would depend somewhat upon the character of the ores to be handled, and also upon whether it would be best to heat the ore before roasting or only during that process.

The question might be asked whether it may not be possible to reduce the great loss of Mn produced by the large amount uniting with the slag. For very good reasons, the manganous oxide can only be reduced from a strongly basic slag; it would become necessary to substitute another base for this oxide to take its place in the slag. This base must not be reduced as readily as the other, and must also possess the property to reduce the melting point of the silicate of lime to such a point that it will remain liquid at the temperature of the manganese furnace. The price of this base ought to be higher than that of manganous oxide. There is, however, very little prospect of realizing this aim.

A New Small Power Steam Motor.

Undoubtedly there still exists considerable demand for small motors driven by steam. Although hot air and gas engines have been very much improved of late, there is room for further improvement. The principal defects in and objections to gas engines have been overcome by the important improvements adopted in the silent Otto gas engine, but this cannot always be employed, for the want of gas to be used as fuel, great first cost and heavy running expenses. The engine here illustrated is one which combines a great many good features, being simple, inexplosive and occupying little space. The engine and boiler are so combined as to insure economic use of the heat generated, and is as safe as any stove used for heating purposes.

The illustrations show a vertical elevation and section (Fig. 1), and top view (Fig. 2). The furnace A, which is surrounded by a system

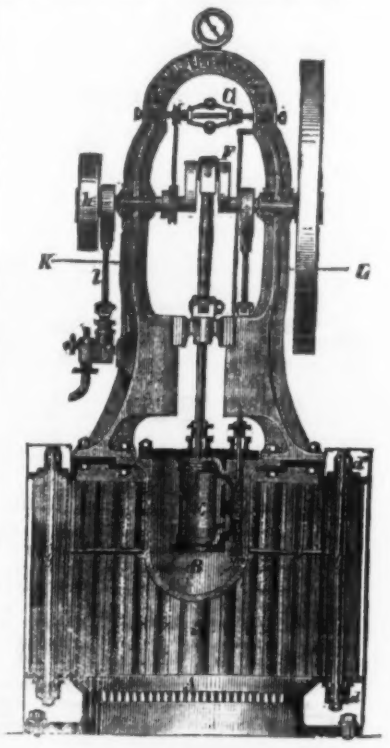

Fig. 1.

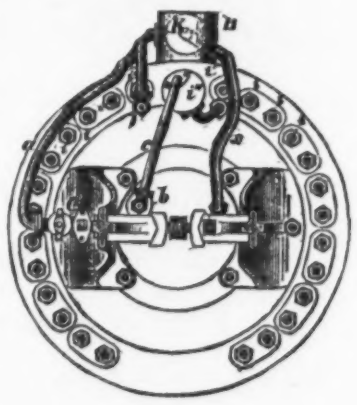

Fig. 2.

SMALL POWER STEAM MOTOR.

of water pipes easily removable, has in its upper part a superheater, B, made of best cast steel, which forms a receptacle for the steam cylinder E of the engine.

The piston rod is connected to the crank pin in the usual manner, having guides on the main frame carrying the shaft. There is no steam chest, as the whole superheater B takes its place, and the steam is distributed by a slide valve in the ordinary manner, being controlled by an eccentric on the main shaft.

The exhaust steam is blown off through a pipe into the open air. The steam has generally a pressure of eight amospheres. The motion of the engine is controlled by the governor G, which also regulates the feed-water supply, by acting upon the valve by the rod *l*, returning the superfluous water into the reservoir. By this double function of the governor a twofold result is obtained; the motion of the engine is controlled by regulating the supply of steam admitted to the cylinder, and the quantity of feed water supplied to evaporating tubes is regulated according to consumption of steam, thereby avoiding the occurrence of a dangerous steam pressure, avoiding also unnecessary strain on engine. The products of combustion pass to the stack through the tube H, and are made to heat the feed water which is supplied by the pump *p*.

The principal improvement in this style of motor is the simultaneous regulation of water supply to boiler, and steam supply to superheater and cylinder. Peculiar features of this design are the arrangement of evaporating tubes, *i i i*, and superheater, and suspending the steam cylinder in the latter, avoiding the use of a steam chest, thereby having the most direct connection between steam generator and cylinder, as the steam, always dry, enters directly from the superheater through the ports into the cylinder. But few minutes are required to set this motor in operation, as there is no body of water to be heated, while the firing is no more than that necessary to run an ordinary stove.

The exports from Sheffield to America of cutlery, rails and steel for the month of August show an aggregate increase in value of £33,000, as compared with the same month last year; but under the head of steel alone there is a decrease of £15,000 in the value of exports for the same period.

Fuel Consumption in Iron Smelting.

Messrs. Taws & Hartman, in a letter to the secretary of the American Iron and Steel Association, say:

In June last we received a letter from you asking if in this country a ton of pig iron had been made with a ton of fuel; if not, whether it was possible to make a ton of iron from best Lake Superior ores with a ton of fuel. We have visited a number of iron works and collected some very valuable data on this subject in the name of your association, and on the condition that no names are to be published. The thanks of your association are due to the iron men who have so kindly shown us their workings. The following is the report of nine furnaces for six consecutive weeks of best running, the furnaces being designated by numbers instead of names.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.
Bosh, feet									
Hight, feet									
Fuel used	Coke.	Coke.	Coke.	Coke.	Anthracite.	Anthracite.	Anthracite.	½ Coke. ½ Anthracite.	Coke.
Heat of blast, degrees									
Quality of pig, Nos.	1, 2, 3	3, 4	1	1, 2, 3	1, 2	2	2, 3, 4	3	1
Pig iron, tons (2268 lbs.)	1,190	750	1,490	1,150	1,100	1,348	870	1,371	1,080
Limestone to ton of pig, lbs.	1,030	1,355	1,815	1,756	2,240	1,815	1,090	983	1,366
Rolling mill cinder to ton of pig, lbs.	1,546	1,355	1,815	1,930	2,240	1,815	1,090	983	1,358
Ore to ton of pig, lbs.	2,227	2,264	2,314	2,900	2,987	2,822	1,603	2,357	3,741
Carbon in fuel, per cent.	85	94	85	82	88	85	87.4	85	85
Fuel to ton of pig, lbs.	2,613	4,816	4,099	2,481	4,480	4,930	3,913	3,090	3,741
Hight, feet	18	21	13	20	18	16	15	17	20
Bosh, feet	78	60	65	75	70	70	56	70	80

Nos. 1, 6 and 8 use the Siemens copper ball pyrometer for testing the heat. This gives a more accurate measurement than other pyrometers at high heats. The superintendent of No. 7 tells us that if he could get 1200 degrees he would have no trouble in making one ton of pig iron with one ton of anthracite coal. It will be observed that the report for No. 9 differs from the form of the other reports; the fuel consumption could not be obtained, and the weekly product of pig iron is stated.

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A curious modification of the normal structure of plant stems, showing the

EFFECTS OF LIGHT AND HEAT UPON VEGETATION,

has been observed by M. Prillieux on making the temperature of the ground about the plant higher than that of the air above. Beans and pumpkins gave the best results. The seeds were placed in earth in a large dish, in which was inserted part of a brass rod bent at a right angle and having a gas flame applied to its horizontal end. The chamber was moist and cold. The seeds germinated well; but on coming above ground the plants acquired a peculiar shape, they grew but little in length and became unusually thick, the latter growth involving much tension in the surface layers, so that deep rifts before long appeared (mostly transverse) and made further growth impossible. M. Prillieux found the enlargement traceable mainly to an increase, not of the number, but of the volume of cells of the interior (cells of the cortical tissue and the pith). The excessive growth of these cells occurred not only in the cell wall, but in the nucleus, which was often multiplied. The excess of temperature of the ground over the air was about 10 degrees. Again, the view adopted by the older botanists that light is either without effect on germination or has an adverse effect, fails to harmonize with some results lately arrived at by Herr Stebler, in the case of many seeds of agricultural importance, such as varieties of meadow grass (*poa*), the germination of which he finds to be favored considerably more by light than by heat. Thus, with two groups of 400 seeds each of *Poa memoralis*, in one experiment there germinated in light 62 per cent., and in darkness 3 per cent. Similarly with *Poa pratensis*—in light, 59 per cent.; in darkness, 7 per cent., and so on. Sunlight being a very variable force, difficult of determination, experiments were further made with gaslight, and with the same result—that light favors the germination of certain seeds, especially grasses, and that these germinate either not at all, or very scantily, in darkness. The fact was verified by Herr Stebler in quite a series of seeds, *Festuca*, *Cynosurus*, *Alopecurus*, &c. In the case of seeds that germinate quickly and easily, such as clover, beans or peas, he thinks light is probably not advantageous.

The first attempts to transmit the time by means of compressed air were made in 1864 by Messrs. Popp and Resch, two Austrian engineers, who, however, were then unsuccessful. After a further investigation of the subject and many disappointments, they were enabled, on the 23d of February, 1877, to inaugurate, in Vienna, the first public service of

THE PNEUMATIC DISTRIBUTION OF TIME,

although at their own expense. In the following year the inventors exhibited their system at the Paris Exhibition, where it attracted considerable attention, a silver medal being awarded to them for it. The manifest utility of the system induced the municipal authorities of Paris, in November of the same year, to grant permission to Mr. Popp to lay down pipes in the sewers of the first, second and ninth arrondissements of that city for the pneumatic distribution of time, and a month later he obtained authority to distribute time in private houses. The Compagnie Générale des Horloges Pneumatiques were formed shortly afterward, and on the 15th of March, 1880, the inauguration of the system for public service took place. Six miles of pipes had been laid down, and four clocks, some having multiple dials, mounted on lamp posts on the boulevards, received pneumatic time from the central works. These clocks have continued to work satisfactorily, and have become an established institution. Since that time the system has been further extended, and at present there are about 16 miles of main pipes laid in the sewers, and upward of 500 houses, in which there are over 2000 pneumatic clocks, are receiving time from the central works, with which they are connected by air tubes. The public clocks have increased from four to fourteen, with 33 dials among them, in the arrondissements alluded to, while on the 19th ult. the Paris Municipal Council granted the company an exclusive concession for 50 years for supplying the time to that city by means of pneumatic clocks, both for public and private use. The system is now being introduced into several large towns in France and in other Continental cities. It is also being introduced into England by Mr. J. A. Berly. The system consists of central works, at which the air is compressed by means of steam engines working air compressors, and stored in reservoirs at pressures varying from 15 to 45 pounds per square inch. The air thus compressed and stored is led to distributing receivers, passing on its way to each through a pressure regulator, by means of which a periodical transfer or discharge of compressed air from the reservoir into the receivers takes place, replacing the air which is discharged every minute from the receivers to the clocks. By means of the regulator the compressed air in the receivers is maintained at a constant pressure, at which pressure it is delivered to a main or normal clock, by which the system of pneumatic clocks is actuated and controlled. This normal clock is an instrument of great precision, and is fitted with an equilibrium or balanced slide valve, which is successively opened and shut by the action of the clock, which is self-winding. The compressed air is admitted to this clock in a continuous current; but, by means of its mechanism, it is transmitted through small branch tubes to the receiving time-keepers in pulsations. The hands of the main clock travel in the same manner as those of an ordinary clock. The intermittent current of air on reaching the receiving clocks, which are those in the streets or houses, acts upon their mechanism, transmitting the time to one and all at the same instant. These clocks are made as simple as possible, having an ordinary minute wheel and a wheel of 60 teeth controlled by a catch fixed on a lever which receives its motion from a leather bellows. Another catch prevents the wheel returning upon itself when once it has been moved one tooth. The pressure conveyed through the system of pipes every minute from the main clock causes the bellows of each receiving clock to expand, thus advancing the wheel one tooth, and the minute hand through a one-minute space. The main air pipes, which are laid in the sewers, are only about an inch in diameter, and these are tapped at intervals to meet the requirements of the customers. From the mains the air is led through branch pipes, about a quarter of an inch in diameter, in the buildings and distributed to the clocks in the various apartments by means of pipes ¼-inch in diameter. The clocks are supplied by the company, a small annual charge being made for their use. The air can be shut off at any time from a house by means of a cock, which is placed on the service pipe at its junction with the main pipe. Leakages in the pipes have no influence upon the general working of the system, which has been brought to great perfection by the Compagnie Générale des Horloges Pneumatiques. The whole matter, in fact, appears to be so simple, its action so certain, and its cost to the public so moderate that, other things being equal, we look for its adoption in our midst at no distant period.

From Paris we learn that the electric tramway has at length begun to work, and has several times gone backwards and forwards. A single overhead tube was tried at first to convey the current, but it was found impossible to insulate the rail by which it returned. Two overhead copper tubes are now used, along each of which at the bottom runs a longitudinal slit. A wire passing through the slit is attached to the tram car beneath, and above to a small wheel which runs freely in the copper tube. As the car advances it draws along the little wheels through each tube, and thus maintains the connection.

The Chicago *Tribune* paragrapher reassures timid travelers, frightened by the recent train robberies, as follows: The trouble on the Alton Railroad is only temporary. A number of fine safety deposit cars are now being built, and when they are completed no fear of train robbers need be felt. Each passenger will be locked in a chilled steel casket before the train reaches Missouri, and on reaching the State line will be unlocked and set at liberty again by officials of the road stationed at that point. It is believed that by adopting this plan the James boys will eventually be obliged to work for a living.

The Iron Age

AND

Metallurgical Review.

New York, Thursday, September 29, 1881.

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CONTENTS.

Among the general indications of prosperity, it is remarked that the domestic manufacturers of cotton and heavy weight woolens find themselves oversold to a large extent. The magnitude of this early demand, which is beyond all precedent, is very much larger, so it is stated in the trade, than is generally realized, some of the mills having practically sold their entire production up to next spring. In some quarters the question is raised whether this early activity has an unhealthy appearance. The most obvious explanation is, that notwithstanding the activity prevailing in all industrial departments during the last two years, the natural growth of the country, and consequent increase of the consumptive demand, is not yet fully appreciated.

Competitive Tests of Steam Engines.

As the fall of the year approaches, and fairs and exhibitions open their doors to the admiring public, the steam engine builders are finishing their preparations for the competitive tests which are to make their own reputations and break those of their business opponents. The money spent in getting apparatus ready and in obtaining data, is often very considerable. The amount of gall and bitterness which can be obtained from one such contest, however, is out of all proportion to the outlay of money and labor. We think that such an exhibition will generally produce more hard feeling, more lying, more mental wretchedness and as little actual benefit, as any one of the world's great battles. A fourth of July oration is not less productive of practical results, and the honors are as empty as the prizes from a church sociable grab bag.

The question is being asked in a serious manner by scientific and business men, What is the value of a competitive test of steam engines? The ordinary engine buyer looks at the figures and sees that each of the competing engines beats all the others, and burns an infinitesimally smaller amount of "combustible per horse-power per hour." Naturally, he concludes that a race in which all the horses in each heat come in a little ahead of all the others, is beyond his comprehension. The engineers look at the figures, and then turn to the logs, only to find that certain unknown quantities have been introduced, or certain known, but essential ones, withdrawn, or some cooking process employed which makes it impossible for them to come to any independent conclusion. The judges are in a most uncomfortable situation. Occasionally they become little more than detectives, to watch subordinates and prevent "jockeying" by firemen and engineers. At other times they are merely official time takers, to put into the log the results of the hocus-pocus of the managers. No one who has ever attempted to do the fair thing by all concerned in such a test, is willling to undertake the task a second time. It is worse than trying to play arbitrator in a family hurricane.

Usually, the efforts to make sure that one engine will do better than another one are of such a character that any fair method of comparing them is out of the question. Both parties want the tests so arranged that by a little manipulation of the figures they can show a great gain. If the judges cannot or will not put the figures into a shape that will permit this, some one must be found who will do it. We do not think that the science of steam engineering has been benefited $500 worth from all the competitive tests of steam engines which have been made in the last 15 years. We have conversed with many of the judges who have served at these trials—men who are certainly above suspicion—and in almost every instance they spoke of cir cumstances which had occurred, or actions on the part of some interested party, which gave rise to doubts in their minds concerning the results supposed to be obtained. Every engineer who has been called upon to take care of engines on exhibition, has tales to tell which, to say the least, are not reassuring. We most unhesitatingly say to all manufacturers, whether they make good, bad, or indifferent machines, do not enter into trials with other engines at the fairs where you exhibit this fall, and do not do it at any other time. The money which such a trial will cost is utterly wasted, and may give the opposing engine a great and unjust advantage. If it does not, the result may be so indecisive as to make the whole trial worthless to both parties.

The fair or the mechanical exhibition may, however, be made valuable as a time and place for obtaining accurate data in regard to engine performance. At these times engine tests should be made, and the results published should be so guaranteed that the scientific world would be willing to accept them. There is an objection at once raised by the manufacturer, that some one else would go over the same ground at another time and, by means of better preparation, obtain a much better record. This seems to have force, but we see no chance for any two manufacturers to obtain similar conditions to begin with, and this would of course make a competition out of the question. Again, each man would be likely to choose such work as would be the best for his own engine. Some would, no doubt, undertake to make a record at the brake, getting so many turns for so many pounds of coal; others would undertake certain kinds of work, and would obtain the closest figures for turning out a given quantity. Even the builders of plain slide-valve engines might obtain results which would be valuable advertising figures, while at the same time they contributed to our scientific knowledge in no small degree. For example, suppose they should undertake to repeat the trials for efficiency of firemen that were made some years ago in England, and should offer prizes to the fireman who would obtain the greatest number of revolutions from the engine at a fixed load with a given amount of fuel, engine and boiler being turned over to him with steam up and water at a fixed level, but with the fire just drawn. This would be a test of the men, but not of the engines. The best man, however, would make a very pretty record for the engine, which would be well worth the insignificant cost necessary to obtain it.

The automatic cut-off engine builder could hardly confer a greater favor upon science than by fitting up his engine according to the best of his ability, and turning it over to some well-known and highly respected expert, with instructions to "make a ten-day test for economy," or "find the most "favorable conditions for economy with "this engine." The answer to either one of these questions would produce a "log" which would not only be both creditable to the engine and the expert, but would be in the highest degree valuable in the hands of the business man of the concern. Such a log, if properly kept, or made up in a simple form, would be valuable to the engine buyer also, who would then have some idea of what he might expect from such an engine, with proper treatment, under similar conditions. Again, a test might be made to settle certain questions in regard to superheating under conditions when economy is often out of the question. At fairs, wet steam is the rule and not the exception. Engine men often laughingly say, in reply to a question concerning the steam supply, "I'm running a pump and not an engine." In such cases the introduction of a superheater with an independent furnace would furnish a series of conditions from which valuable data might be obtained. If a boiler maker and an engine builder could so arrange matters as to exhibit together, one furnishing steam for the other, matters would be greatly simplified and no end of valuable material could be obtained. When we say valuable, we mean valuable to the business end of boiler making and engine building. The scientific value is beyond question.

We doubt whether there is a builder of portable slide-valve engines in the country who could not so arrange one of his engines for a trial that information useful to both himself and the public could be obtained. And here, we suppose, the grand objections to such trials will be found. It will take some such shape as this: "If I go to to the "expense of making such tests and then pub-"lish them to the world, some of my com-"petitors will get hold of them and then "will know just as much as I do." The answer to this is easy enough. The competitors of any one who makes any such objection already know more than he does. They are not likely to be the gainers. There are few secrets in steam engine building that one maker can keep from another, and the publication of the actual logs of half a dozen engines built at any one shop, are far more likely to do good than harm. It has become a well recognized fact that the diffusion of knowledge is in every way an advantage to all parties concerned, and that nothing can be gained by any attempt to obtain an advantage by means of trade secrets. But whatever tests may be made, the results sought by them should be answers to such questions as steam users are likely to ask. For example, the steam user wants to know what is the cost of 10, 50 or 100 horse-power per day, with an ordinarily good engine, run in the fashion which usually prevails in shops or factories, and what the same power would cost with the same engine and the very best of care. In such a test every item, from the cost of the waste to the interest on the investment, should be specially noted. A carefully kept log from an engine doing the work, as it is usually found at our annual exhibitions, would be of no small interest, if every ounce of waste and gill of oil was put upon the record and indicator cards taken at regular intervals. It would be possible, in connection with such a record, to test, even at one of our American Institute fairs, the value of the different kinds of anthracite coal for steam purposes, and that, too, without one dollar's worth of expense to any of the parties concerned. It will be asked, What good will come to engine builders from tests of this character? We answer, very great good. It will at once raise the standard of an establishment encouraging or making such tests, and give the proprietor a wide reputation for accurate and scientific work. Circulars containing such information will be read and preserved, because they contain data of value. This will be found especially true if the results are put in such shape that those who understand only the elementary facts of steam engineering can comprehend them. The higher scientific modes of experience may be put into foot-notes, or printed as appendixes. There are engine catalogues which are put away and treasured by all engineers into whose hands they come, but there are more which have no interest or value for anybody. The typical catalogue is one that every steam user should want to keep for reference or put into the engine-room for his engineer. It should be full of good suggestions for all. Such a catalogue can only be the result of tests made by the manufacturers with engines in the hands of competent experts who have reputations above suspicion. We may, in conclusion, again express our belief that the days of competitive engine trials, whether in this country or England, are numbered. Certainly they should be, for public confidence in them and in the results attained by them has vanished.

The strike in the Cincinnati mills is about entering the fifth month of its duration, and at present there seems no prospect of either side giving in. Of the mills in the immediate vicinity of Cincinnati, a litttle mill—that of B. Benjamin & Co.—has agreed to pay the price and is running. On the other hand, Globe Rolling Mill No. 2, and the Riverside Mill of Swift are running with non-union men and at Pittsburgh prices. The two Portsmouth mills are also running with non-union men.

England's Adverse Balance of Trade and Her Carrying Trade.

There are some facts and figures in a pamphlet recently published by the Cobden Club, entitled, "The Reciprocity Craze," which are worthy of more consideration than Americans usually pay to the publications of this society, even when, as was the case last year, so many of them are sent us without money and without price. The author of the pamphlet, Mr. George W. Medley, discusses at length what he terms "the main argument of protection"—the excess of imports over exports—which is by no means the main argument of protection, but is one that within a few years, at a time when our imports were in excess, has been used as an argument in favor of the adoption of free trade in this country, and is so used to-day. But it is with Mr. Medley's facts and figures, not his arguments and assertions, that we have to deal. Mr. Medley states that the Board of Trade returns for 1880 show that Great Britain imported during that year £411,000,000 and exported only £286,000,000, leaving an apparent balance against her of £125,000,000. Mr. Medley asserts, however, that this adverse balance is fictitious, as shipping receipts, insurance, interest, merchants' profits and income from foreign investments, are omitted. These are put down at £126,000,000, which leaves a balance in favor of England of £1,000,000. Without stopping to ask if Mr. Medley has not cheated himself in this last calculation, as the close approximation of these two sums would lead one to suppose might be the case, it may be pertinent to ask if this is the country that but a few years ago laid the whole world under contribution to fill its coffers? Whatever may be the explanation that Mr. Medley and his co-laborer, Mr. Mongredien, may give, it is a fact that the amount of Great Britain's foreign trade has been steadily and rapidly diminishing, and the only explanation that can be given is that the English people are becoming less and less manufacturers or producers, and are becoming more and more merchants or middlemen.

But the point of chief importance to us is the method in which the apparent adverse balance of £125,000,000 is met. This is largely by freight, insurance and other minor charges. Mr. Mongredien, in his book, "Free Trade and English Commerce," estimates this at 11 per cent. in the customs valuation, and two-thirds of this as paid to English ship owners, underwriters, &c., by foreign consignees of English exports. He assumes, and justly, that, considering what English-owned vessels earn on intermediate voyages, 11 per cent. would fully come to English ship owners and underwriters. Now, why should we pay this tribute to England, not only on our imports, but on our exports as well? for it is a serious fact that this tribute is exacted both ways. While England does two-thirds of its own export trade in British ships, how much of the exports of this country are carried in American ships? We do not purpose at this time to argue the question as to why English vessels carry our business, but to point out that both Mr. Medley and Mr. Mongredien virtually acknowledge that one of the reasons that England has not a very heavy adverse balance against her to-day, is because of her income from this same carrying trade. Why should we not be in a similar position? We can be and we should. As Mr. Blaine said in his speech of last January before the United States Senate: "From the beginning of the war to this "hour the Congress of the United States "has not done one solitary thing to uphold "the navigation interests of the United "States. Decay has been going on steadily "from year to year. The great march for-"ward of our commercial rival of old has "been witnessed and everywhere recog-"nized, and the representatives of the peo-"ple of the United States have sat in their "two houses of legislation as dumb as "though they could not speak, and have "not offered a single remedy or a single "aid." Is it not about time that this silence was broken?

A correspondent calls our attention to what he considers an error of spelling in the last issue of *The Iron Age*. The word in question was printed "employees," and our correspondent says: "Now, if men are "spoken of, and a French word is used to "designate them, I think you will agree "with me that the correct one should be "used, and that is the masculine *employé*, "and not the feminine *employee*." In reply, we would say that while our correspondent is partly right, we are not wrong. *Employé* is French, pure and simple. "Employee" is the English form of the word, and is recognized by our standard lexicographers. Strictly speaking, however, neither is correct as commonly used, and although we often follow the current usage, we do so under protest. We have no better word than "workman" to designate whas is meant when "employé" or "employee" is used; but this is not quite satisfactory, as employers are often workmen in the fullest sense. It also fails to recognize the distinction between those who work at bench or machine, or in any of the usual handicrafts, and those who serve in other capacities for wages, or, to use the more common term, "salaries." The English word "servant" is comprehensive, but the term is objectionable to most wage earners in this country. They serve, but do not like to be called servants. We need a word which shall have the exact meaning that attaches in popular usage to employee as distinguished from employer. Masters and men are good words, which would be satisfactory if they could be brought into general use; but they are open to the objection that the masters are men, and that the men are often masters. Perhaps it is better, after all, to fall back upon "workman," for it is commonly supposed that employers have no work to do, and that the men who earn wages do all that contributes to profit. Meanwhile, our correspondent has not helped the matter much, unless he takes account of the satisfaction we have experienced from learning that *employee* is the feminine of *employé*.

Developments in the Tin Market.

When the general "boom" in merchandise took place ten years ago, first in this country and then quickly responded to in Europe and the colonies, tin was one of the articles most rapidly run up to an extreme figure. Straits soon nearly touched £100 per ton in the London market. In March, 1880, the excitement abated, and in May tin broke down completely, declining temporarily to £70, but it soon recovered to £84. 10/ in June and to £90. 10/ in July, reaching £93. 5/ in November, and finally culminating at £91. 10/. The extreme range last year was £70 and £98. This year, up to the end of September, has been exempt from active speculation and violent fluctuations in Europe, and to nearly an equal extent on this side. During the first eight months of the current year the lowest point reached by Straits tin in London was £87. 7/6, and the highest £90. 10/. Since then, speculators for a rise have succeeded in advancing the price considerably. This they have been able to accomplish, in spite of the fact that the average visible supply in England and Holland during the first eight months of the present year has been 14,865 tons, against 14,443 in 1880. At the end of September, 1880, it was 13,989 tons; October 31 it was 13,579; November 28 it was 13,407, and at the close of the year, 14,104. On the 1st of September, 1881, it was 14,967, against 13,083 the previous year, the price of Straits being £90. 10/, against £86. 10/ September 1, 1880, and £69. 10/ September 1, 1879. From a statistical point of view, so far as England and Holland are concerned, the high price to which tin has suddenly been driven hardly appears justified.

On this side, the metal has all along shown great statistical strength and soundness. Last year the importation of tin into the United States was fearfully overdone—so much so that from the Straits alone there were shipped this way during the first seven months no less than 5007 tons, against 3297 during the corresponding period in 1879. This year the shipments were restricted to 2419 tons. In consequence of the heavy supplies pouring in upon us during the earlier portion of 1880, quite a break in prices occurred toward midsummer, as the following table shows:

LOWEST AND HIGHEST PRICE OF STRAITS TIN AT NEW YORK, IN CENTS.

Month.	1880.		1881.	
	Lowest	Highest.	Lowest	Highest.
January	21	24½	19½	20½
February	23	23½	19½	20¼
March	21½	22	19¾	20
April	18¾	21½	20	20¼
May	16	18¾	19¾	20
June	15½	18	19½	20¾
July	18½	21¼	20¾	20¾
August	20¾	21¾	20¾	21¼
September	19¾	20	21	21¼
October	19¾	20	....	....
November	20¼	21	....	....
December	19½	21	....	....

Consumption, if not capable of absorbing the entire heavy supply, still proved unexpectedly large, and the price was thus able to recover after a comparatively short period of depression. It thenceforward remained steady, and has been remarkably firm ever since, as our table shows, for if consumption has not been as great this year as it was in 1880, the supply has been very moderate. The position of tin here has been a very sound one so far during the year, but will cease to be so if speculation runs up the price to a point checking liberal consumption, while inviting heavier shipments this way in the belief that our consumptive capacity is fully restored to what it was last year.

Tin, at present prices, is by no means cheap, as will appear from an examination of the range of prices in England:

AVERAGE PRICE OF LAMB & FLAG IN ENGLAND.—PER TON.

	£	s.	d.		£	s.	d.
1880	91	9	9	1877	73	5	0
1879	72	13	4	1876	79	5	0
1878	65	12	0				

On Sept. 23, 1881, it stood £101.

The main strength of the metal seems to lie in the circumstance that production in the Straits Settlements is lighter than usual, and may fall off this year some 3000 to 4000 tons, as compared with 1880, while simulta-

neously China takes unusually large amounts of tin, even at the current rather high prices. At other points of production there is, so far, no notable decrease, nor is there any increase to compensate for the Straits deficiency. Should the discount in London not be materially raised during the next month or two, speculators for a rise may, under the circumstances, succeed in advancing Straits tin still higher, but it is evident, from what we have shown, that the metal will then become dangerous property, unless consumption assumes proportions on both sides of the Atlantic beyond present prospects and expectations.

Internal Taxation and the Revenue Reform Theorists.

We note that the suggestion made in these columns last spring, that it was possible that the next Congress would consider the advisability of reducing the internal taxes, especially those on spirits and liquors, is being quite earnestly advocated in some sections. Senator Cameron, of Pennsylvania, has already put himself on record as favoring some reduction in these taxes, and Mr. Wharton Barker, of Philadelphia, has written an open letter to Justin S. Morrill, advocating the abolition of all internal revenue taxes. Mr. Barker's general argument is as follows: He deems the internal taxes intrinsically objectionable because they continue in the daily experience of the people the war's exactions beyond the point of necessity, particularly in the Southern States. They make the national authority seem inquisitorial and harsh, restraining and taxing the people in pursuits that were for merly free; and are inimical to the policy of pacification, which is now so desirable. These taxes are objectionable because they are unnecessary, and the tax on the capital and deposits of banks, and the stamp tax on matches, checks, and proprietary medicines are especially unpopular. The collection of unneeded revenues leads to wasteful appropriations and schemes of plunder. To dispense with the internal revenue officials would simplify the problem of reform. To pay off the debt more deliberately will avoid the threatened early demolition of our national banking system. A large portion of the internal taxes are drawn from the Southern States, whose finances are disordered and whose revenues are insufficient to meet their public obligations. Should these taxes be relinquished by the National Government, they might be taken up and made a source of revenue by the separate States. As there must be at an early day a reduction in our national taxes, the question is whether we shall lighten the burden on our own products or remove the duties upon foreign goods, and, as the internal taxes must be partly removed, would it not be every way best to remove them altogether? We notice that the free trade and revenue reform papers are crying out against this movement, and demanding that these taxes shall be retained and the tariff reduced. This is quite consistent with the free trade and revenue reform theory, that no tax should be imposed or continued which is found of any benefit to the community. It is, of course, perfectly right and proper to impose a tax on the importation of anything which is not, and cannot be, raised or produced at home; but the moment a duty becomes protective and offers substantial encouragement to domestic industry, that moment, in the judgment of the free-trade school, it becomes iniquitous. It is not at all surprising, therefore, that these gentlemen are found opposed to the reduction of internal taxes which are simply burdens, and which cannot by any chance benefit the people; nor is it surprising that they clamor for the reduction of duties on imports to a point where they will cease to be protective. They must be consistent, even though it be with an absurdity, as it happens to be in this case.

River Front Warehouses.

The needs of New York City in the matter of pier accommodation for merchandise *in transitu*, are becoming every day more imperative. As remarked by the freight agent of one of our steamship lines, "There "is not room enough between the Battery "and Canal street for the business done "along that portion of the water front, and "there are endless troubles from blockade "during the busy season." New York is already "hide-bound." Confined within the limits of Manhattan Island, the volume of merchandise coming to this center for distribution or transshipment will soon surpass the means for handling it. Even now it is frequently necessary that gangs of men work all night in order that freight can be cleared from the wharves, to escape a worse accumulation on the following day. After making every effort to expedite business, assisted by all the improved steam auxiliaries, the North River front, along which runs the belt line railway, often becomes wedged immovably with a mass of vehicles.

It is clear that at no distant day some method of relief must be devised, and the plan adopted must be in accordance with a recognized system to which all interests can conform. The most progressive of the steamship companies in providing for local freight accommodation is the National Line to London, which has erected a substantial two-story building on the pier, forming, practically, a double-decked wharf—equivalent to an extension of the river front. Important advantages are thus gained, especially in consideration of the fact that wharf leases, even at the present exorbitant rates, are almost impossible to obtain. Eventually the tax on commerce thus imposed—the "corners" in wharf property which are made possible—must work a serious injury to the commerce of the port. As the question now stands, the structure of the National Line affords the best exponent of the measure of relief demanded; but should a fire occur and the entire accumulation of material vanish in ashes, the methods now so much approved would be unsparingly denounced. An inviting field is here offered for a design for a permanent iron structure adapted to the entire water front, the same to be located in part or wholly on the pier, or connected by elevated railways with fireproof warehouses extending parallel with and beyond the belt line tracks.

Insurance Against Accidents in the Iron Trades of Great Britain.

The employers of England have been casting about for some method of protecting or insuring themselves against the possible effect of the action of the Employers' Liability Act. The Iron Trade Employers' Association have adopted a plan that may be of interest to this country. This is a system of mutual assurance, based upon certain data that have been collected and arranged and the premiums calculated by an eminent actuary. The result has been the fixing of lower rates of insurance than the regular companies offer. The actuary judged from his data that the rate of accidents among the class of men insured was not so great as among the general public, and, further, that the expenses of administration would be reduced to a minimum. The returns were obtained from members of the association, employers of 30,000 workmen in the different departments of the engineering, shipbuilding, iron-founding and machine-making trades. This is the actuary's summary; "From these returns it "appears that in the three years 1877–80, "among employees numbering 29,430, there "were 39 fatal accidents, or 13 per annum; "2002 minor accidents, or 667 per annum. "Number exposed to risk in three years, "88,290. One death in 2263; one minor "accident in 44."

A period of three years has been taken to test the soundness of the conclusions arrived at, and then the premiums may be reduced if found more than sufficient to meet claims made under the act. At present the premiums stand as follows: Class A, machinists, 2/ per cent. upon the amount of wages paid annually. Class B, engineers generally, founders, millwrights, tool makers, locomotive makers, marine engineers, boiler makers, &c., 3/ per cent. upon the amount of wages paid annually. Class C, shipbuilders, 4/ per cent. upon the amount of wages paid annually. These rates are founded upon a consideration of returns of accidents in the three years 1877–80.

Holland's submarine torpedo ram has disappeared from its former anchorage near Bay Ridge, L. I., and a farmer living thereabout expresses the opinion that she may be somewhere on the dry docks "bein' constructed into a cast-iron watermelon." She is popularly supposed to represent a bad investment of Fenian funds. As the farmer says, "She don't submarine fur a cent."

METALLURGICAL NOTES.

THE FLUID DENSITY OF METALS.

In a paper by Prof. W. C. Robertson and Mr. T. Wrightson, read before Section C of the British Association, the authors described their experiments on the fluid density of metals, made in continuation of those submitted at the Swansea meeting of the association. Some time since one of the authors gave an account of the results of experiments made to determine the density of metallic silver, and of certain alloys of silver and copper when in a molten state. The method adopted was that devised by Mr. R. Mallet, and the details were as follows: A conical vessel of best thin Lowmoor plate (1 millimeter thick), about 16 centimeters in hight, and having an internal volume of about 540 cubic centimeters, was weighed, first emoty, and subsequently when filled with distilled water at a known temperature. The necessary data were thus afforded for accurately determining its capacity at the temperature of the air. Molten silver was then poured into it, the temperature at the time of pouring being ascertained by the calorimetric method. The precautions, as regards filling, pointed out by Mr. Mallet, were adopted; and as soon as the metal was quite cold, the cone with its contents was again weighed. Experiments were also made on the density of fluid bismuth; and two distinctive determinations gave the following results:

$$\left.\begin{matrix}10.005\\10.072\end{matrix}\right\} \text{mean, } 10.039.$$

The invention of the oncosimeter, which was described by one of the authors in the *Journal* of the Iron and Steel Institute (No. II, 1879, p. 418), appeared to afford an opportunity for resuming the investigation on a new basis, more especially as the delicacy of the instrument had already been proved by experiments on a considerable scale for determining the density of fluid cast iron. The following is the principle on which this instrument acts: If a spherical ball of any metal be plunged below the surface of a molten bath of the same or another metal, the cold ball will displace its own volume of molten metal. If the densities of the cold and molten metal be the same, there will be equilibrium, and no floating or sinking effect will be exhibited. If the density of the cold be greater than that of the molten metal, there will be a sinking effect, and if less, a floating effect when first immersed. As the temperature of the submerged ball rises, the volume of the displaced liquid will increase or decrease according as the ball expands or contracts. In order to register these changes the ball is hung on a spiral spring, and the slightest change in buoyancy causes an elongation or contraction of this spring which can be read off on a scale of ounces, and is recorded by a pencil on a revolving drum. A diagram is thus traced out, the ordinates of which represent increments of volume, or, in other words, of weight of fluid displaced—the zero line, or line corresponding to a ball in a liquid of equal density, being previously traced out by revolving the drum without attaching the ball of metal itself to the spring, but with all other auxiliary attachments. By means of a simple adjustment the ball is kept constantly depressed to the same extent below the surface of the liquid; and the ordinate of this pencil line, measuring from the line of equilibrium, thus gives an exact measure of the floating or sinking effect at every stage of temperature, from the cold solid to the state when the ball begins to melt. If the weight and specific gravity of the ball be taken when cold, there are obtained, with the ordinate on the diagram at the moment of immersion, sufficient data for determining the density of the fluid metal; for

$$\frac{W}{W^1} = \frac{D}{D^1},$$

the volumes being equal. And remembering that

W (weight of liquid) $= W^1$ (weight of ball $+ x$ (where x is always measured a $+$ ve or $-$ve floating effect), there is obtained the equation:

$$D = \frac{D^1 \times (W^1 + x)}{W^1}.$$

The results obtained with metallic silver are perhaps the most interesting, mainly from the fact that the metal melts at a high temperature, which was determined with great care by the illustrious physicist and metallurgist the late Henri St. Claire Deville, whose latest experiments led him to fix the melting point at 940° C. The authors of the paper showed that the density of the fluid metal was 9.51, as compared with 10.57, the density of the solid metal. Taking their result generally, it is found that the change of volume of the following metals, in passing from the solid to the liquid state, may be thus stated:

Metal.	Specific Gravity, Solid.	Specific Gravity, Liquid.	Percentage of Change.
Bismuth.	9.82	10.055	Decrease of volume 2.3
Copper...	8.8	8.217	Increase " 7.1
Lead....	11.4	10.37	" " 9.93
Tin.....	7.5	7.025	" " 6.76
Zinc.....	7.2	6.48	" " 11.10
Silver...	10.57	9.51	" " 11.20
Iron.....	6.95	6.88	" " 1.02

SEPARATION OF MINERALS OF EQUAL SPECIFIC GRAVITY.

In separating ores of various descriptions from each other and from the adhering gangues by means of water, it is the specific gravity of these substances, when reduced to equal sizes, that causes their final separation. For, when subjected to a current of water upon an inclined plane, the heavier substances will be deposited at its top, while those of less specific gravity will be swept away, as is the case in washing ores; or when dropped in a column of water, the heavier ore will fall quicker to the bottom, while the lighter stuff is kept in suspension for a longer time and settles down more slowly; as is the case in jigging machines. Whenever there are two substances of equal size and specific weight, such a separation cannot, however, take place, because they will always be moved with equal speed. This happens, for instance, with the sulphide of zinc or blende, and with the sulphide of iron or iron pyrites; for both ores have about the same gravity. As a mixture of them has very little commercial value, and a separation by means of water is not practicable, other processes have been invented for this purpose. Thus magnets have been used for the extraction of the pyrites, after it has been converted into magnetic iron pyrites by roasting of the ore mixture with an addition of carbonaceous substances. Another process, which is still more simple and efficient, was lately devised by director F. Büttgenbach, of the Lintorf Lead Mines, near Düsseldorf. The very productive lodes of these mines yield a mixture or lead ore, galena, iron pyrites and blende, accompanied by quartz, limestone and bituminous shale. Upon the very perfect machinery of the Lintorf ore-dressing mill all other substances are thoroughly separated from each other, with the exception of certain sizes of pyrites and blende, which are too small for hand-picking. As the specific weight cannot be utilized for the separation of these, Mr. Büttgenbach has hit upon the excellent idea to make the differences of cohesion in the two minerals available for their separation, for blende is much softer and can be more easily crushed than pyrites. For the purpose, Mr. Büttgenbach employs the Vapart centrifugal disintegrator, the reducing action of which can be so nicely regulated that the blende can be reduced to sand and the pyrites left intact. The first trials with a Vapart disintegrator No. II showed that, with 600 revolutions a minute, the pyrites were too much broken up; the same happened with 450, but with 225 too much blende remained unbroken, while with 325 revolutions the blende ore was almost perfectly reduced to fine sand, and the grains of pyrites, 10 mm. or 6 mm. in size, kept their volume, so that both could be easily separated by simply passing them over a sieve. This simple operation is a great commercial success, as it enhances the value of a substance which was almost valueless because it was too poor for an ore of zinc, and too impure for the burning kilns of chemical works. The blende sand, which contains from 50 to 55 per cent. of zinc, is now worth about £4 a ton, and the grains of pyrites separated from it sell easily at 12/ a ton. The process answers equally well for all sizes, from 25 mm. to 4 mm., and one Vapart apparatus is capable of separating from 2½ to 3 tons an hour.

METALLURGY OF NICKEL.

Describing the nickel and cobalt extracts at the recent German Exhibition of Patents and Designs, Dr. Kollmann says: It is only within a few years, since the discovery of pure malleable and weldable nickel by Dr. Th. Fleitmann, that nickel has entered the rank of those metals which are technically employed on a large scale. Previously only the alloys of nickel with copper and other metals could be easily wrought, while pure nickel could neither be hammered nor rolled. The reason of this was that pure nickel absorbs (occludes) gases while melted (Fleitmann thinks it is carbonic oxide), and the nickel cannot be worked until these gases are removed. Fleitmann's process for making nickel malleable consists in adding a very small trace, only one-twentieth of a per cent. of magnesium, which is introduced in the form of a bar into the liquid nickel while in the crucible. This small percentage of metallic magnesium renders this brittle metal perfectly malleable, and it can even be welded. Magnesium is well known to oxidize very easily (at high temperatures) and hence serves to remove these injurious gases. The extraordinary technical importance of the new discovery (which is already patented in all countries) is evident at once. Formerly alloys with comparatively only a little nickel could be used, say, for coin. The German 10 pfennig pieces (like the American 5-cent piece) contain only 25 per cent. of nickel to 75 of copper. Now, on the other hand, we can have pure nickel cast in any desired shape, and also forge it and roll it like iron or steel. We may, indeed, assume with tolerable certainty that if Fleitmann's method had been known ten years ago, we Germans would not have been pestered with our unhandy little 20 pfennig silver coins, for much more convenient ones could have been stamped from pure malleable nickel. Pure nickel, in addition to its malleability, possesses the great advantage that it does not lose its luster in moist air and is unaffected by organic acids, while its alloys, we know too well, gradually lose their luster and turn reddish.

Fleitmann, in his very interesting investigation, also made the discovery that pure nickel treated with a very little magnesium became weldable just like iron, and upon this he founded a method of welding nickel to iron. This discovery has gained very considerable importance, since we are now able to weld plates of nickel on both sides of the iron or steel, instead of merely depositing on it a thin coating by electricity. The question of welding, which is not yet settled in the metallurgy of iron for Bessemer metal, for example, may perhaps be solved in a manner similar to that in which Fleitmann solved it for nickel. Its importance technically and economically can hardly be overestimated. Nickel made by the new process with magnesium has a resemblance to carbureted malleable iron. Dr. Kollmann describes a series of tests of strength with Fleitmann's nickel, made by himself, which led to a surprising result, namely, that the elasticity as well as the absolute strength corresponds exactly with those of medium hard Bessemer steel. The expansion by rolling and forging of the two metals is the same, so that they can be rolled together. He then gives some of the numerical results of his tests, which we omit, but they go to show that the physical properties of nickel and iron are very analagous, so that the thought arises that perhaps nickel is, after all, only an allotropic state of iron. Since nickel and steel expand equally, blocks of nickel can be welded on both sides of an ingot of steel, and the whole rolled out into sheets of any desired thickness already covered with nickel. Iron wire, covered with nickel, could be drawn out just like ordinary wire. Another advantage is that the welding as well as the melting temperature of steel and nickel is close together, so that the nickelized steel can be welded as before. Cobalt can be rendered malleable and weldable in the same manner, *i. e.*, by the addition of a little magnesium. Fleitmann has also discovered that not only can nickel and cobalt be welded on steel and iron, so as to form nickel-plated wire and sheets, but that it can be welded on to the alloys of copper and nickel, which can be rolled at a very high temperature. In this operation the metals to be welded are surrounded with thin sheet iron, which is afterward dissolved off, or is heated in an air-tight apparatus. In this way, too, sheet iron can be combined with alloys of copper and nickel by welding. To prevent articles made of nickeled steel or iron from rusting on the cut surfaces, the iron beneath is dissolved away at the edges with dilute acids, and the projecting nickel then hammered down and welded over it. In Birmingham, H. Wiggin makes nickel malleable by adding 2 to 5 per cent. manganese.

FURNACE SLAG FOR MINE PILLARS.

Dingler's Polytechnic Journal says that when furnaces are situated in the vicinity of mine shafts, it has been found highly profitable to utilize their slag by substituting it for the pillars of coal which were allowed to stand to support the roof and overhead rock. The slag is run into iron cars having movable sides, from which it is taken to cooling grounds, where it is finally broken up after solidifying. The slags are relatively hard or porous, according as they are single or compound silicates, which depends upon the working of the furnace. The broken material is then taken into the mine to be used whenever necessary. Experience at the furnace Gräfin Laura has shown that, while for every 100 kgs. of coal mined, about 1.85 pf. was expended for timber, the use of slag reduced this item to 1.02 pf. During the last quarter of 1879–80, the additional product of coal amounted to 17,686 tons replaced by furnace slag, and the cost of production, 30,305.53 marks, which makes, per cwt. mined, 8.59 pf., against 13.55 pf., as formerly. One hundred c. m. of loose slag gives 80 c. m. of material, which packs and hardens as soon as put in place, and is then ready to bear the pressure of the superincumbent material. A final shrinkage of about ½ per cent. occurs in the first year after being put in place, which, however, is inconsiderable. The use of the slag for this purpose, moreover, reduces the expense of carting it to dumping grounds, which latter also are expensive, on account of the purchase money sunk in them. Besides this, all land damage, by settling of the mine, is avoided, as sufficient material can always be utilized to provide against accident. Another important point is that no fire can occur in the exhausted part of a mine, for no combustible material may remain, all of it being replaced by slag. The small shrinkage of the slag prevents settlement, as well as all cracks, which frequently admit large quantities of water, becoming very troublesome.

British Iron Exports.

The *Colliery Guardian* says: There are some indications of change in the export iron trade that are well worth attention. In the first place, there has been for the greater part of this year a decided declension from the immense quantities of raw iron that were sent to the United States a year or so ago. It is also certain that that country has taken a much larger share of steel rails and of Bessemer blooms this year. But there are signs that there will be more crude iron sent soon. The prices of pig iron in the markets of the United States have risen just as the stocks of imported iron in the stores at the ports have fallen, and as there has not been as yet any corresponding increase in the prices in this country, it may be at once said that it will be more profitable to export iron, and more will, in consequence, be exported to the United States. This increase of trade with the United States is one of the triumphs of the British iron manufacturer, for it can be said to be nothing less for him to be able to make iron here, send it to that distant country, and, despite the heavy duty imposed on its entrance, to undersell the producer there. It is becoming clear that the ultimate effect of the duties that have of late been so much in favor in foreign countries is only to raise prices there until it becomes profitable to import iron, and the latter is then the means of checking the further increase of prices. This is what has been done, and is being done in the United States. And as it is probable that the same thing will be known in other districts, it may be that it will lead to a larger export of pig iron to countries in Europe that are forcing up prices in this abnormal method.

Hence, there is some possibility of a further growth of our trade in crude iron, and that apart from any increase that may arise from its use for steel-producing purposes. And, concurrently, it may be expected that any large increase in the exports would lead to the increase of the price here, but it might also lead to an increase so great as to check the growth in the trade, as was the case two years ago. Indeed, at the present time, the symptoms in the trade are somewhat similar to those of that time, when the demand set in from the United States. It will be remembered that a demand arose for crude iron, as well as for old rails, &c., and that such vast quantities were sent that the markets in America were glutted, and prices that had risen so rapidly fell as rapidly. In the time that has elapsed, there has been, first, a material reduction in the stocks of pig iron in the hands of brokers and others in the United States, and there has also been a reduction of the output of pig iron in most of the producing countries. The latter is inevitable from the lowness of prices, and until there is a rise in prices, it is tolerably certain that that reduction in the output will be continued. Both these indicate a probability of scarcity of iron, and as the demand for it continues as large, it may be assumed that the present time shows the most likelihood of a change. There is again a demand for old rails and other forms of scrap iron, and, as we have seen, there is an increase in the price of Cleveland and other imported irons in the United States. If these continue for a few weeks more the effect will begin to be evident—evident in the increase of shipments from this country to the United States, and evident possibly also in the higher rates that are charged here.

Meantime, another change is less forcibly shown, but it is surely to be seen in the returns of the Board of Trade. That is the enlarged area over which we distribute our pig iron. At one time, we exported crude iron only in small quantities, and then the shipments to Belgium and Germany especially rose. We now send fair quantities to these countries, and we also send an enlarging shipment to other countries that were not wont to manufacture iron, and that now seem to be entering into that branch of the metallurgical industries with some rapidity. There are two views of this widening of the area of the manufacture. First, it is not altogether a satisfactory sign to see that we must lose a part of our manufacturing profits, by sending, in however small a degree pig iron in place of manufactured. But it is consolatory to think that our pig iron trade grows, and that we are widening its area, and are thus less dependent on the vagaries in fiscal legislation of one or two countries.

Metrical Abbreviations.—It may interest our readers to know that the following abbreviations for metrical units have recently been decreed by the Spanish Government for Spain and its colonies:

Kilometer.....	km.	Stere.....	S.
Meter.....	m.	Cubic meter...	m^3.
Decimeter.....	dm.	Cubic decimeter.	dm^3.
Centimeter.....	cm.	Cubic centimeter.	cm^3.
Millimeter.....	mm.	Cubic millimeter.	mm^3.
1-1000 millimeter.	m.	Hectoliter.....	hl.
Square kilometer.....	km^2.	Decaliter.....	dal.
Hectare.....	ha.	Liter.....	l.
Are.....	a.	Deciliter.....	dl.
Square meter....	m^2.	Centiliter.....	cl.
Square decimeter.....	dm^2.	Ton.....	t.
Square centimeter.....	cm^2.	Metrical cwt.....	q.
Square millimeter.....	mm^2.	Kilogram.....	kg.
		Gram.....	g.
		Decigram.....	dg.
		Centigram.....	cg.
		Milligram.....	mg.

The first locomotive built in Washington Territory was recently turned out by the North Pacific Iron Works, in Seattle. It is a small tank engine, with 6 x 10-inch cylinders, and is to be used on the logging road of Blackman Bros., near Muckilteo, in Snohomish County.

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President the American Society for Prevention of Cruelty to Animals, New York.

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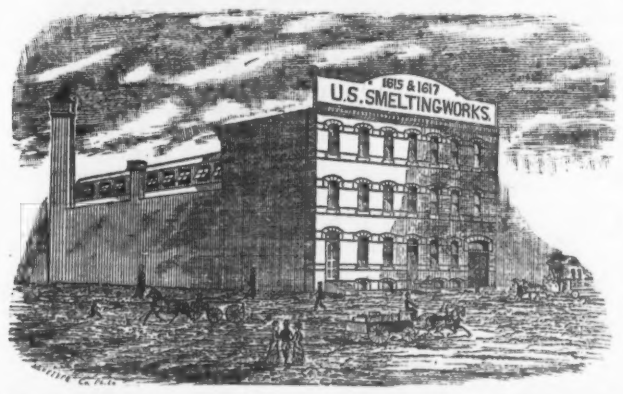

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SPECIALTIES: Fluting Machines, Hand Fluters, Plaiting Machines, Christmas Tree Holders, Bickford Portable Pump, Mrs. Potts' Patent Cold-Handle "Crown" Irons, Ice Cream Freezers and Cake Mixing Machines.

INDUSTRIAL ITEMS.

MAINE.

The machine and boiler works of George Moulton, Bath, are busy turning out small engines, windlasses, capstones, steering apparatus and tanks for new vessels.

VERMONT.

The Vermont Marble Company, at Sutherland, recently filled an order for ten steps for the Boyd Opera House, Omaha, Neb. The steps were 13 feet long, molded and polished edge, and were sent within three days after the receipt of order.

MASSACHUSETTS.

Robbins, Gamwell & Co. are putting the Parmlee automatic sprinklers for fire purposes into the Weston Paper Works, at Dalton, the North Pownal and Williamstown mills, the Arnold Print Works, Eagle Mill, Freeman Print Works and Beaver Mill, at North Adams, and the Renfrew gingham mill, warp mill and others at Adams.

The order for the lappers for the Canoe River Mills, Taunton, has been given to the Whitehead & Atherton Machine Co., and the cards to the Mason Machine Works.

The Ames Company, of Chicopee, employ 550 men in their general manufacturing business, and have orders enough on hand to last a year. About 150 hands are employed in the sewing-machine department, which turns off 75 machines a day. The Sword Company employ 125 hands.

The Chase Turbine Mfg. Co., Holyoke, who often feel the need of greater motive power than they are furnished by water, have put in a stationary engine of 20 horse-power, from Kendall & Roberts' manufactory, Cambridgeport, Mass.

The Washburn Car Wheel Works, Worcester, are putting in six new steel furnaces and otherwise improving the works.

The Holyoke Water Power Company are making a number of improvements in the work of testing turbine wheels, one of the most important being the use of an electric clock in the flume, which saves the services of the man who announced the time. Several wheels are tested every week, and the work will grow in importance as it becomes more and more necessary for the manufacturers to get perfect wheels.

VIRGINIA.

The Powhatan Furnace, at Richmond, which has been lying idle for some years, is about to be repaired and put in blast by the Reading Coal and Iron Co. This is a 50 x 13½-foot stack, built for coke in 1860, and called the Westham Furnace. In 1873 it was rebuilt for anthracite. It has an open top, with water power blast, and a capacity of 9000 net tons. It will probably be run with coke. Mr. John Birkinbine is making plans for its reconstruction.

PENNSYLVANIA.

No. 2 furnace of the E. & G. Brooke Iron Co., at Birdsboro', chilled on the night of the 19th. A large force of men are at work digging her out, and she will be blown in again as soon as possible.

The machinery of the Keystone Tack Company, of Pottstown, consisting of twelve tack machines, a number of grindstones and other paraphernalia, has been sold to Eastern parties and is being shipped.

The rolling mill of Kimberly, Carnes & Co., in Greenville, is running double turn in all departments. The effort to establish another rolling mill there is meeting with success, and there is but little doubt that the enterprise will be started.

The 50 new coke ovens in course of construction at the Chicago and Connellsville works will be completed by the 1st of October. This will make 200 ovens in blast at these works.

At Wheatland, six of the 12 double puddling furnaces in the Wheatland mill have been put in shape to have the fires lighted in them. Workmen are engaged in rebuilding other portions of the mill, and present appearances indicate that the mill will be started soon.

Last week the Gaysport Foundry made their first casting in their foundry, having had that part of the extensive works repaired and in good working order. The new pattern shop and office building is put up.

A boiler exploded at the Keel Ridge Furnace of Kimberly, Carnes & Co., Sharon, on the 23d. The boiler was one of a battery of four that were used to supply the blowing engines. The cause of the explosion is not known. No injury was done to any of the employees except one man, whose arm was broken.

The Royal Flint Glass Works, at West Bridgewater, Beaver County, have been in active operation since August 25. They are working full time and have plenty of orders ahead.

The Scottdale rolling mill has put down two large wells for water, but did not get a sufficient supply for their mill. Manager Everson is now having holes drilled through the rock, and expects to get sufficient streams to supply their demands. The wells are 15 feet square.—*Keystone Courier.*

Dispatches from Easton are as follows: The buildings of the Lucy Furnace, near Easton, were burned on Sunday. Loss, $100,000.

PITTSBURGH AND VICINITY.

The agitation about the high prices charged by the retail coal dealers is having a good effect, the price having been cut down one cent by all dealers supplied by the B. & O. and the A. V. railroads.

Oliver Bros. & Phillips will likely get their new bolt factory started next week. It is a large extension of their former large bolt works.

The Independent Glass Company's furnace is undergoing extensive repairs, and will be ready for use in about two weeks.

The Lewis Foundry and Machine Company, Limited, will get their new machine shop to work the latter part of this week or the beginning of next. Then they will have in operation some of the largest and best machinery in the country. The foundry and old machine shop are very busy on some large work.

Jones & Laughlin have just completed a large branch house in Chicago. The structure has 125,000 square feet of floor surface. Railroad tracks run into the building and give direct connection with the entire western and northwestern railroad system.

At the Apollo Rolling Mill of Laufman & Co. everything is running full. The puddling department started up double turn last week.

The new chimney house of Thomas Evans & Co., Eighteenth and Josephine streets, Southside, is now in full operation. This is one of the most complete factories of the kind in the country.

The Empire Plow Works, Allegheny, have put in two new Bradley cushioned hammers. They are busy, and running full time.

Thomas Coffin & Co., clay-pot manufacturers, are running full time and are very busy as usual.

The Leechburg Rolling Mill of Kirkpatrick & Co. is running full in all departments.

OHIO.

The Hubbard Rolling Mill is shut down on account of it being impossible to secure a sufficient amount of water to run the works.

The Laughlin Nail Mill, Martin's Ferry, is being rebuilt as fast as possible. Some 40 additional machines will be put in.

The Etna Machine Works, which located in Sharon, Pa., until their new buildings could be completed, have returned to Warren. The machine shop and foundry are each 50 by 100 feet, and built with a view to transact a large business.

The Volcano Furnace, at Masillon, which has been idle for several months, was again started in blast a few days ago.

The Long & Allstatter Company, Hamilton, recently made some shipments of very heavy punches and shears to the East. A 20-ton double shear was sent to the Gautier Steel Works, Johnstown, Pa.; another went to the Dexter Spring Company, at Hulton, Pa.; one to Richmond, Ind., and another to Canton, all of the above within a few days of each other. They have orders now ahead for the next four months.

A large number of the Hocking Valley furnaces are banked up from a variety of causes. The stoppages are only temporary, however, all having orders ahead at good prices, and no unsold orders on hand.

Madison Furnace, in Jackson County, has changed back from cold-blast to hot-blast, and is now running on No. 1 foundry iron.

The Girard Iron Company, Niles, has leased the Thomas Furnace Company's furnace for a term of years. It will be run in connection with the Girard Furnace.

Alice Furnace was to go into blast last Wednesday.

The Cuyahoga Works, of Cleveland, have just completed three of their 2000-pound steam helve hammers for the Lake Erie Iron Company. These hammers are especially adapted to forging the heavy paten of car axles now so generally used by railroad companies, and will be set up in the new forge now being built in the eastern part of the city.

ILLINOIS.

The Northwestern File Company, of Chicago, are running to their fullest capacity, which they find is not adequate to the demand, and will, on that account, shortly remove to more commodious quarters.

The Chicago Rawhide Belting Company are manufacturing in the neighborhood of 10,000 feet of belting per week. They have supplied all the belting used at the Inter-State Industrial Exposition, now being held in Chicago; also all the belting for the Mechanics' Exposition at Boston, Mass., and are sending heavy shipments to the New England States.

Messrs. John Davis & Co., Chicago, in addition to their contract to supply heating apparatus for the City Hall and Court House in Chicago, have also the contracts for their heating system to the Insane Asylum at Anna; St. Mary's College, Ind., and some large contracts for Milwaukee. They report they are driven to their utmost capacity.

The Peter Devine Boiler Works report having orders ahead for the next three months; they are now completing the large suction pipe to be used in the water works system of the town of Lake, and manufacturing several large boilers for the Insane Asylum at Kankakee. They employ at present about 100 men, and will shortly increase that number.

The addition of new machinery to the establishment of Robert W. Gardiner, manufacturer of the Gardiner compensation governor, at Quincy, has increased its capacity to 6000 governors per annum. Yet Mr. Gardiner expects to erect new works which will enable him to double this output. He now employs about 100 men.

The Hercules Iron Works, of Chicago, have just completed the fourth set of linseed oil machinery, built under A. B. Lawther's patent. They are also building considerable machinery of the same class for various oil mills. They are now adding to their facilities by building an improved cylinder boring machine. The works, in addition to the machinery mentioned, have just completed a compressed brick machine of large capacity.

Channon, Emery & Co., stove manufacturers, of Quincy, are turning out about 70 stoves per day. They run a force of 60 hands, and occupy extensive buildings.

Williams, White & Co., of Moline, are having a considerable demand for their arch-bar bending machines and drop presses. They have recently received for the former an order from Gardner & Sons, Carlisle, Pa., and another from the Knoxville Iron Co., of Knoxville, Tenn.

The annealing room of the Malleable Iron Works, at Elgin, was burned on the 22d.

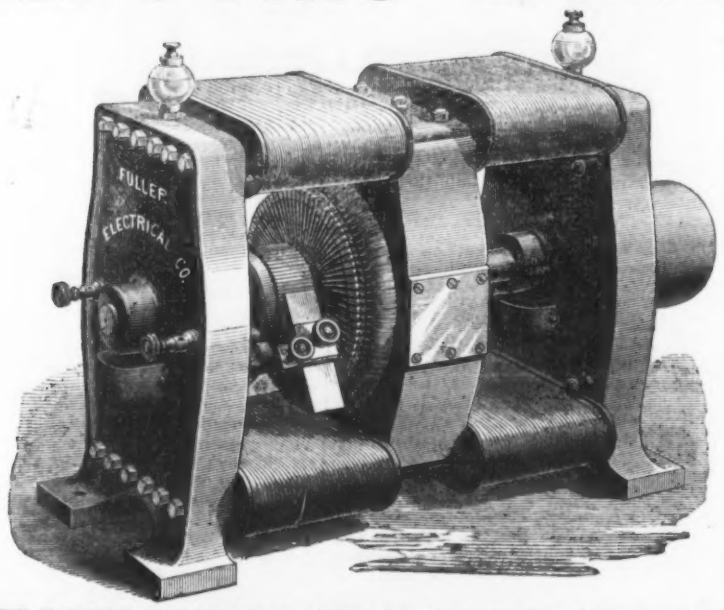
The places of the strikers in the nail factory of the Calumet Iron and Steel Company's Works, at Irondale, are all filled. The works are running double turn, and the company are at present refusing orders for present and short time delivery.

The Excelsior Stove Works, of Quincy, report a prosperous business, and are now two months at least behind their orders. They have recently built a considerable addition to their foundry. Their consumption of iron is about 1000 tons a year.

The nail forging machine which the Northwestern Horse Nail Company have been experimenting on for some time, has proven a success. The new machines are in process of construction.

The Moline Malleable Iron Works, at Moline, have just completed a building which will be used as a depository of patterns, in order to protect them from fire. These works now employ fully 100 men, and are rushed with business.

ELECTRIC LIGHT.



THE FULLER ELECTRICAL COMPANY, having perfected their system of Electric Lighting, are prepared to furnish the **Improved Gramme Dynamo Electric Machines and Electric Lamps,** either for single lights or for from **2** to **20** lights in one circuit.

This apparatus is unexcelled for **durability, steadiness of light** and **economy of power,** and **requires less attention than any other.**

For price list and further particulars apply to

THE FULLER ELECTRICAL COMPANY,
44 East Fourteenth Street, NEW YORK.

GUTE HOFFNUNG'S HUTTE,

(Works of Good Hope.)

Established 1781. OBERHAUSEN, ON RUHR. 8500 men employed.

BRAND:

G. H. H.

STEEL RAILS, STEEL WIRE RODS,
STEEL BLOOMS, SPIEGELEISEN,
FERROMANGANESE UP TO 75 PER CENT.

GODEFFROY & CO., Sole Agents for the United States,
43 New Street, NEW YORK.

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. Cor. Twelfth and Noble Sts., PHILADELPHIA.

GENUINE BABBITT,

Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.

DEOXIDIZED BRONZE,

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals.

PHILADELPHIA, October 4, 1879.

PHILADELPHIA SMELTING COMPANY, City.—GENTLEMEN: After a trial of eighteen months of your "Deoxidized Bronze" as journal boxes in our rolling mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used.

Very truly, HENRY DISSTON & SONS.

TURNED
MACHINE SCREWS,

One-sixteenth to five-eighths diameter.
Heads and points to sample.
IRON, STEEL and BRASS.

JOHN FELLOWS,

(Successor to LYON & FELLOWS.) Factory and Office, *14 Durham Place, Williamsburgh, N. Y.*

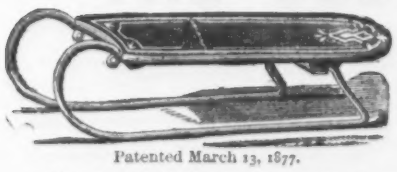
H. H. COLES & CO.,

446 North Twelfth Street, **PHILADELPHIA.**

NEW CHUCKING DRILL REST.

It will hold all sizes of drills up to 1¼ inches. **Price 60 Cents.**

THE ULSTER SLED.



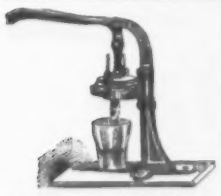
Patented March 13, 1877.

The best, most durable and easiest running Sled in the market. Outsells all others.

SHERIDAN VELOCIPEDES,
the latest out. Send for catalogue and price list to

CROSBY, SAHLER & CO.,
Rondout, N. Y., Manufacturers.

W. H. QUINN & CO., Sole Agents, 79 Chambers St., New York.



R. Onderdonk,
Sole Manufacturer of
LEVER LEMON SQUEEZER,
With Perforated Strainer.
405 Grand St,
NEW YORK.

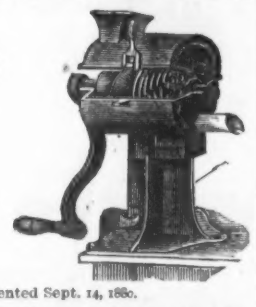
ZERO
REFRIGERATOR,
with Water, Wine and Milk Cooler. Best Food and Ice Preserver in the world. Send for Book. A. M. LESLEY, 380 Sixth avenue.
Also the Rotunda Furnace.

MACHINERY FOR
Straightening and Cutting Wire
Of all Sizes to any Length.
Send for Catalogue.
JOHN ADT,
New Haven, Conn., U. S. A.

John Carver,
MANUFACTURER OF
CAULKING IRONS,
Cotton, Freight and Hay Hooks,
No. 44 North Third Street,
Near First. **BROOKLYN, E. D.**

Kieser's Gem.

Double Shearing Cut. Solid Cast Steel Blades.



Patented Sept. 14, 1880.

Family Meat Cutters are the best made.

Every family should have one. Will thoroughly cut Raw or Cooked Beef or Pork, Vegetables, Cocoanuts, Pine Apples, &c. Will cut forty pounds sausage meat an hour.

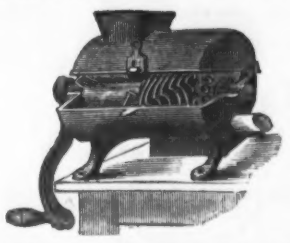
Every Druggist should have one for cutting Roots, Vanilla Beans, &c.

Easily worked. Easily cleaned. Will not get out of order. Ask your dealer for them.

Send a postal for Circular with testimonials.

Will send one as sample by express upon receipt of $2.00.

Kieser's No. 55



Are Made on the Same Principle as the Gem Meat Cutters,

But with capacity to cut 100 pounds Pork an hour.

Will send one as sample on receipt of $3.00.

Our **No. 1 Butcher,** for hand or power, will cut 300 pounds an hour.

Our **No. A Butcher** for power, will cut 1000 pounds an hour.

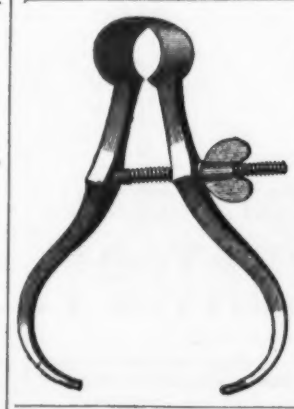
We warrant our Cutters to do the work more thoroughly than any other machine made.

Also Sole Manufacturers of

KIMBALL'S PATENT SHOVELS & SPADES,
BOSS PATENT MOLASSES GATES,
LOCKWOOD'S PATENT HOES.

KIMBALL SHOVEL CO.,

Office, No. 67 German St., Baltimore, Md.



J. STEVENS & CO.,

Chicopee Falls, Mass., P. O. Box 224,

Manufacturers of

Spring Calipers and Dividers.

Also, Surface Gauges and Counter Sinks, Stevens' Patent Breech-Loading Sporting Rifles, double and single barrel; Shot Guns, Pocket Rifles, Pocket Pistols, and the noted Hunters' Pet Rifles. Our

SHOOTING GALLERY RIFLE

Is the favorite everywhere.

Torrey's Door Springs.
S. ROEBUCK & CO.,
Manufacturers,

164 Fulton St.,
NEW YORK.

Torrey's Patent
COG WHEEL
Ice Cream Freezers.

Torrey's Door Springs.
S. ROEBUCK & CO., Manufacturers,
164 Fulton St., New York.

MORSE TWIST DRILL AND MACHINE CO.

NEW BEDFORD, MASS., Sole Manufacturers of

Morse Patent Straight-Lip Increase Twist Drill,

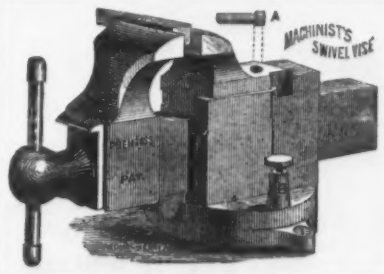
Beach's Patent Self-Centering Chuck, Solid and Shell Reamers,

BIT STOCK DRILLS,

DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS. DRILL GRINDING MACHINES. TAPER REAMERS, MILLING CUTTERS AND SPECIAL TOOLS TO ORDER.

All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.



PRENTISS' PAT. VISES,

Adjustable Jaw.
Stationary and Pat. Swivel Bottoms.
Adapted to all kinds of Vise Work.
Sold by the Trade.

PRENTISS VISE CO.,
23 Dey Street, New York,
Sole Proprietors.
Send for circular

ADAM HEINZ. GEO. J. MUNSCHAUER. MICHAEL J. STARK

NIAGARA STAMPING & TOOL CO.,

Manufacturers of

Presses, Dies and Tools

For Working Sheet Metal.

Fruit Can and Tinners' Tools, &c.

Works, 147 and 149 Elm Street,
Near Clinton st., **BUFFALO, N. Y.**

BLAKE CRUSHER CO.,

New Haven Conn.

BLAKE'S
Challenge Rock Breakers.
Patented Nov. 18, 1879.
See *The Iron Age* first issue of the month.

Beardsley Scythe Co.,
Manufacturers of
GRASS, GRAIN & BUSH SCYTHES,
Hay Knives & Corn Knives.
West Winsted, Conn.

See our advertisement in *The Iron Age* first issue of each month.

Grindstones, Emery, &c.

WALPOLE EMERY MILLS,

Manufacturers of

GENUINE TURKISH EMERY,

Emery Cloth and Paper,
Emery Wheels and Machinery,
Flint Paper,
Flint Glue, Crocus, Rouge, &c., &c.,
114 Milk St., BOSTON.
Factory, So. Walpole.

Walter R. Wood,
GRINDSTONES.

Berea, O., Nova Scotia, & other brands
283 and 285 Front Street, New York.

GEO. CHASE,

The largest manufacturers in the world of

OIL STONE

Of all description.
107th Street and Harlem River,
Send for Illustrated Price List. **NEW YORK.**

McDERMOTT & BEREA STONE CO.,
Manufacturers of
GRINDSTONES,
Cleveland, Ohio.

OHIO GRINDSTONE COMPANY,

Manufacturers of

GRINDSTONES

Of All Kinds.

127 Superior Street,
CLEVELAND, OHIO.

NEWCASTLE GRINDSTONES

(ENGLAND).

Celebrated for their uniform quality and keen rasping grit, have now a world-wide reputation.
For prices apply to
R. ATKINSON & CO.,
Manufacturers,
Office, *Guildhall, Newcastle-on-Tyne.*

OHIO GRINDSTONES.

Superior Ohio Grindstones, manufactured by **P. L. Cole,** Constitution, Ohio, will be supplied to the Southern trade at lowest possible rates by

S. B. LOWE, Southern Agent,
Chattanooga, Tenn.

EMERY.

Large stock on hand, especially suited to Saw and Shovel Manufacturers, at bottom prices.
Importers and Manufacturers of
PURE TURKISH EMERY.
IRVINE, TOWNSEND & CO.,
123 Chambers St., New York.
Send for quotations and samples.

Porter & Burnham's
PATENT
Picture Frame Vise
The Greatest Invention of the Age.

It has no ratchets or cogs to wear out, and is operated by a treadle, thus allowing entire freedom to both hands of the operator. It is made entirely of iron; is easily and quickly adjusted to molding of any width and frames of all sizes.

Holds both pieces of molding at once, and is the only perfect Picture Frame Vise in the market. Price, $5. Discount to the trade.

L. G. Burnham & Co
Sole Manuf'rs,
BURLINGTON, VT.

HAMMOND'S Window Springs

Lock and support upper and lower sashes—all sizes. Are very convenient, simple and durable. Sample to the Trade free.
W. S. HAMMOND,
Lewisberry, York Co., Pa.
Circulars give full instructions.

B. FITTS PATENT MAGNETIC METAL SEPARATOR,

Manufactured by

EZRA SAWYER,
33 Hermon St., *WORCESTER, MASS.*

IOWA.

Morrison Bros., manufacturers of plows, at Fort Madison, have recently made some important additions to their works. A new addition, 145 by 55 feet, two stories and basement, brick, has been erected. This building is to be devoted to wood and iron-working machinery. They have also erected another addition, 40 by 40 feet, which is to be used as a setting up shop. They manufacture sulky plows, harrows, road scrapers and railroad grading plows. The demand for the latter is constantly increasing. The entire works when completed will occupy an area of 250 by 145 feet.

The Western Wheel Scraper Co., of Mt. Pleasant, during the past summer have placed a new 40 horse-power boiler and a new engine in their establishment and have built an extensive addition to their works. They are full of orders, and report sales this year double those of any former one. A new drag or road scraper, which they are manufacturing, is meeting with an extensive sale.

The Hawkeye Steel Barb Fence Co., of Burlington, manufacturers of the Hawkeye lock-binding barb wire, now employ 25 men on full time. They have this season added six new barbing machines to their works. The capacity of the establishment is about 10 tons a day.

The Comstock Scale Works, of Mt. Pleasant, are enjoying a prosperous business, and have recently been compelled to increase their capacity by the addition of new machinery.

TENNESSEE.

Work on the Warner Furnace, Hickman County, is progressing rapidly. Large quantities of coal and ore are in readiness, and the furnace will be put in blast early in November.

KENTUCKY.

Pennsylvania Furnace, which was compelled to stop on account of the great scarcity of water and to put in a new hearth, will probably go into blast next Monday. She has about 500 loads of charcoal on hand and some 600 yet to come in, and has on the bank some 3000 tons of ore, and is daily receiving more.

GEORGIA.

Hermitage Furnace is doing well, and is making about 15 tons a day cold-blast car-wheel iron.

There are now on the line of the Selma, Rome and Dalton Railroad nine charcoal furnaces making car-wheel iron, where a year ago there were but five in operation. They report no difficulty, however, in securing a ready market for their iron at good prices.

ALABAMA.

The Bibb Iron Works Company, in Bibb County, are putting a new hearth in their furnace. They have been producing about 15 tons a day, strictly cold-blast charcoal iron. The company have been improving the plant largely, building dwelling and stock houses, &c. They own 9000 acres of ore and timber lands in Bibb County. Messrs. Rogers, Brown & Co., of Cincinnati, are sales agents.

MISSOURI.

The Standard Stamping Company and the Standard Tool Company are the names of two new companies recently organized in St. Louis. The former propose to engage in the manufacture of all kinds of stamped and japanned ware, and the latter will manufacture railroad, mining and similar tools, and small forgings.

The Burlington Cutlery Company, at Burlington, established last June for the manufacture of table and butchers' cutlery, are turning out their product in large quantities, and are yet 60 days behind their orders. They employ 25 men, and occupy large and substantial buildings. They have recently made important additions to their machinery which will materially increase their capacity.

MICHIGAN.

We are informed that the charcoal blast furnace at Caseville, belonging to the Lake Huron Iron Company, has been obliged to stop operations, owing to a large quantity of their cord wood having been destroyed by the late fire. The wood having been chopped, was waiting transportation, but before it could be secured was destroyed.

The following table from the Marquette *Mining Journal*, exhibits, in gross tons, the total lake shipments of iron ore the present season, up to and including Sept. 7, together with the amount shipped during the corresponding period last year:

Where from.	1880.	1881.
Escanaba	831,436	993,052
Marquette	468,961	561,011
L'Anse	38,169	36,894
Total	1,360,566	1,590,957

An increase of 230,391 gross tons. In addition to this there was shipped pig iron, ore and quartz, as follows:

PIG IRON.	
Carp River Iron Co.'s furnaces	5,497
Pioneer Furnaces	902
Total pig iron	6,399
QUARTZ.	
Carp River Iron Company	3,577
Ore to local points	16,793
Total ore, pig and iron and quartz	26,269

An experiment recently made with greasy rags to determine the degree of their inflammability, demonstrated that cotton rags saturated with boiled linseed oil and placed in a box at a temperature of 170° F., became heated to 340 degrees, and took fire in an hour and a quarter. In another experiment cotton saturated with crude oil, and kept in a room of the same temperature, ignited within five or six hours. Rapeseed oil caused ignition in ten hours. In a room at 120° F., cotton mixed with a little olive oil burned in six hours. Castor oil required more than 24 hours, whale oil only four hours, and fish oil two hours. Spermaceti oil, free from glycerine, did not ignite at all; neither did heavy tar, coal tar or slate oils.

The engineers at the St. Gothard Tunnel under Andermatt, believe they have at last mastered the quicksand formation by means of granite vaulting. If the plans prove successful the completion of the great work is promised at an early day.

LABOR AND WAGES.

The Cincinnati strike continues and is nearing the close of its fourth month, and with no prospect of either party surrendering.

The small boys of the Zanesville (O.) bottle glass works struck last week for an advance of 50 cents per week on their wages. They held out for about one hour.

The Knoxville (Tenn.) mill is still running, the Amalgamated to the contrary notwithstanding.

The stove foundry of Wm. Resor & Co. has been a non-union shop since the big strike of 1867, although sometimes union molders were allowed to work in the shop. But Union No. 3 was not satisfied with this manner of doing business, and concluded to have the shop a strict union shop or a non-union shop. The superintendent, Mr. Truesdale, informed the committee appointed to look after that shop that he had come to the conclusion to run a strict union shop, as the men he had paid hundreds of dollars bounty to had at last deserted him and he had come to the conclusion to fight the union no longer, which was a very sensible conclusion, for the Resor Company has spent a fortune during the last sixteen years fighting the union, besides the trouble of teaching inferior workmen to do their work. This must be a bitter pill to swallow. After fighting the union for fourteen years, and spending thousands of dollars, to find themselves worse off than when they commenced, and the union twice as strong. But it is said, "the more bitter the pill the more perfect the cure."—*Iron Molders' Journal.*

The Cream City Iron Works, of Milwaukee, Wis., have reduced the hours of labor of their employees to 57 hours a week, for which a full week's wages will be allowed.

A delegate convention of all the miners in the Steubenville district is called to meet at Morris Hall, Steubenville, Ohio, on Thursday, September 29, 1881. As the miners of Salineville, Ohio, are closely connected commercially with the Steubenville miners, they are invited to send delegates to meet with them.

The ore miners' strike at Ishpeming, Mich., is over, and the mines there are sending their usual large weekly product to the market. The interruption caused by the strike did not materially curtail shipments.

Twenty-five tapping boys employed in Oliver Bros. & Phillips' bolt works, struck for an advance of wages last week. The firm propose to employ girls in the place of the strikers, stating that they can do the work as well, if not better.

The following are the terms on which the labor troubles at New Orleans have been compromised, after a lockout of 13 days: Employers shall have the right to engage whom they please, whether members of any association or not, and to discharge any employee, whether belonging to any association or not, and there shall be no restriction on the part of any employee which will interfere with the business of his employers. The Employers' Association agree to make no discrimination against any member of the various associations who may have been discharged by reason of their individual efforts to secure them employment in the branch of labor to which they pertain. The wages agreed to are: Draymen, $3 a day; longshoremen, day work, 40 cents per hour; night work, 60 cents per hour; Sunday work, 80 cents per hour.

Lease of Three of the Reading Company's Furnaces.—The receivers of the Reading Railroad and Coal and Iron Company have had under consideration for some time a proposition to lease three of the large iron furnaces which have been idle for several years. The offer, which came from a number of gentlemen already engaged in the manufacture of iron, has been accepted, and the terms of the lease and other details will very soon be made public. The furnaces are the Port Carbon, the Swede and the Minersville, and they will no doubt be blown in without delay. It is also intended to start the rolling mill attached to the Port Carbon Furnace, and there is authority for the announcement that the Clymer Furnace will be in operation shortly, so that before the close of the year there will be 60 furnaces blown in out of 86 along the line of the Reading Railroad, the best showing in several years. There are now 56 furnaces in blast, which indicates that something has occurred to stimulate iron manufactures since last season. Other furnaces that have been either discontinued or run irregularly have also started up. Ormrod, Fisher & Co. have blown in the large Emaus Furnace, near Allentown, Pa. The present year has also seen the leasing of three other properties—the Riggold Furnace to William H. Kauffman & Co., the Bechtelville Furnace to the Pottstown Iron Company, and the Hamburg Rolling Mill to Wister & Co. There have been other changes and renewals of activity in the Reading iron region, but these refer only to the properties controlled by the Coal and Iron Company. The Reading Rolling Mills and the Montour Iron and Steel Works, both under the direction of W. E. C. Coxe, are the only ones the company are running.

The *Railroad Gazette* records the construction of 239 miles of new railroad, making 4474 miles this year, against 3539 miles reported at the corresponding time in 1880, 2064 miles in 1879, 1245 miles in 1878, 1335 miles in 1877, 1599 miles in 1876, 761 miles in 1875, 1082 miles in 1874, 2691 miles in 1873, and 4765 miles in 1872. This year would probably have exceeded already the great mileage of 1872 had not the severe winter and late spring prevented railroad work from making any progress during nearly four months of the year.

The conventional and traditional style of architecture which gave to Philadelphia the monotony of white steps and green shutters, is fast being superseded by a more modern and costly one. The people are said to like it, and the novelty is so great that architects' offices are overrun with orders for the most elaborate, and at the same time most substantial, sort of edifices.

How to Render Wood Fire-proof.—Mr. P. Folbarry, of this city, has devised a method of making wood incombustible, without, in any way, altering its outward appearance. Wood prepared in accordance with his process may possibly be charred just at the surface, but the heat to which it is exposed, though ever so intense, can never penetrate right into the wood and touch its fibers. Timber petrified in this way is particularly suitable for staircases that are to resist a conflagration. The composition devised by the inventor is as follows: 55 pounds of sulphate of zinc, 22 pounds of potash, 44 pounds of alum, 22 pounds of sesquioxide of manganese, 22 pounds of sulphuric acid at 60 degrees, and 54 pounds of water. The whole of the solid substances are put into an iron vessel containing water at a temperature of 113° F. When all this solid matter is dissolved, the sulphuric acid is poured in slowly until the whole is saturated with it. The solution is now ready, and, in order to prepare timber with it, the pieces must be put on an iron grate in a suitable recipient, in accordance with the size of the pieces and the object for which they are intended, care being taken to leave half an inch between any two pieces. The composition is pumped into the recipient, and, after the whole of the spaces have been filled up, it is left there in a boiling state for three hours. The wood is then taken out and placed on a grate-like wooden stand in the open air to make it dry and firm. When thus prepared, the impregnated wood may be used for shipbuilding and building in general, for railway carriages, scaffoldings, posts, wooden pavements, and generally for all purposes, while it is desirable that the material should be able to resist fire.

Exports from San Francisco.—Following is a statement of the values and destinations of the merchandise and produce exports from San Francisco by sea during the month of August and for the first eight months of the year:

	August.	Eight months.
New York	$577,700	$3,786,100
Great Britain	2,563,100	14,592,900
Belgium	72,800	970,700
Germany	2,700	30,800
France	234,000	688,600
Hawaiian Islands	277,200	1,526,600
British Columbia	195,800	746,400
Mexico	132,100	1,597,700
China and Hong Kong	364,300	3,741,600
Japan	39,900	354,500
Peru	200	14,000
Other South American ports	7,900	61,100
Australia	98,100	541,700
New Zealand	12,400	113,500
Society Islands	86,500	323,300
Philippine Islands	.....	4,000
Other Pacific Islands	.....	35,800
Central America	65,600	498,500
Panama	23,000	123,300
Siberia	.....	116,500
Totals	$4,603,300	$29,767,600
In 1880	2,053,100	19,464,300
Increase in 1881	$2,550,200	$10,303,300

A clear gain of $10,000,000 this year by the water routes alone is not bad.

Special Notices.

Second-Hand & New Machinists' Tools.

In Store Sept. 29, 1881.

Two Car Axle Lathes. Hewes & Phillips. New.
One 56 in. x 13 ft. Horizontal Boring Lathe. Pond.
One Engine Lathe, 36 in. x 18 ft. Putnam.
One Engine Lathe, 36 in. x 15½ ft. Good order.
One Engine Lathe, 34 in. x 17 ft. Pond.
One Engine Lathe, 30 in. x 14½ ft. New Haven.
One Engine Lathe, 28 in. x 18 ft. Ames. New.
One Engine Lathe, 27 in. x 17 ft. B'klyn S. E. Works.
One Engine Lathe, 24 in. x 12 ft. Ames. New.
One Engine Lathe, 24 in. x 10 ft. New Haven.
One Engine Lathe, 22 in. x 20 ft. Putnam.
One Engine Lathe, 20 in. x 12 ft. Ames. New.
One Engine Lathe, 20 in. x 10 ft. Ames. New.
One Engine Lathe, 20 in. x 8 ft. Ames. New.
One Engine Lathe, 18 in. x 6 ft. L. & L.
One Engine Lathe, 18 in. x 8 ft. L. & L. With turret head.
One Engine Lathe, 19 in. x 8 ft. Blaisdel.
Six Engine Lathes, 16 in. x 6 ft., 7 ft. & 8 ft. Ames. New.
One Engine Lathe, 12 in. x 7 ft. Hewes & Phillips. A1
One Engine Lathe, 15 in. x 6 ft. Flather. New.
One Engine Lathe, 15 in. x 6 ft., with turret head.
Two Sensitive Drills.
One 38 in. Upright Drill. New Haven. New.
One 29 in. Drill. Prentice.
One 22 in. Upright Drill. Pond.
One 26 in. Upright Drill. Pond.
Four 24 in. Upright Drills. Ames. New.
Four 20 in. Upright Drills. Prentice. New.
Three 16 in. Upright Drills. Prentice. New.
Two Index Millers. Pond.
One 15 in. x 6¼ ft. Fox Lathe. New. Eq. action.
Two Gould Milling Machines.
One No. 4 Smith & Garvin Millers.
One No. 3 Pratt & Whitney Miller. Lincoln.
Fifty five Lincoln Pattern Milling Machines.
One Gear Cutter, 24 in. Gould.
Six Hand Lathes, 11, 14 and 16 in. s. x 4½ to 7 ft. bed.
One 24-in. Shaper. Hendey Mch. Co., new.
One 15 in. Shaper. Hendey Machine Co. New.
One 15 in. Shaper. Steptoe. New.
One 15 in. Shaper. Gould. New.
One 12 in. Shaper. Gould. Second-hand.
One 9 in. Shaper. Hewes & Phillips.
One 26 in. x 8 ft. Planer. Hendey. New.
One 30 in. x 8 ft. Planer. Hewes & Phillips. New.
One 20 in. x 6 ft. Planer. Putnam.
One 24 in. x 6½ ft. Planer. Harris.
One 24 in. x 4 ft. Planer. Osborn.
One Crank Planer, 12 in. stroke. A1.
One Suspension Drill, Back Geared. A1.
One 6-Spindle Horizontal Drilling Machine.
One 1000 lb. Sweet's Steam Hammer.
One 14 in. x 30 in. Baird and Huston Slide-Valve Engine. New.
Belting, Shafting, Pulleys and Miscellaneous Machinery. Lot of Wood-working Machinery. [ery.

E. P. BULLARD, 14 Dey St., New York,
GENERAL EASTERN AGENT FOR
Akron Iron Co.'s Hot Polished Shafting.

HOW TO
KEEP BOILERS CLEAN,
And Other Valuable Information.
A book sent free to engineers and steam users by
JAMES F. HOTCHKISS,
84 John St., NEW YORK.

WANTED.
An experienced Entry Clerk by an importing Hardware house. References required.
Apply P. O. BOX 96, New York City.

Wanted.

To manufacture by contract Light Machinery of any description; also, all kinds of Steel and Iron Drop Forgings and Dies. We have a full complement of machinery and tools for the above class of work. Call on or address,
DANBURY DROP-FORGING AND MACHINE WORKS, Danbury, Conn.

WANTED.—The New York Agency for some A1 out of town establishment. Have had 10 years' experience in New York on my own account metal line. References. Security if necessary.
C. TUCKER,
153 South Oxford st., Brooklyn, N. Y

Special Notices.

New and Second-Hand
MACHINERY.

One Horizontal Engine, 15½ in. x 30 in. Todd & Rafferty.
One Horizontal Engine, 3 in. x 6 in.
One Beam Corliss Engine, 500 H. P.
Portable Engines from 10 to 25 H. P.
Two Horizontal Return Tub. Boilers, 100 h. p. each.
One Hor. Tubular Boiler, 6 ft x 14 ft. 67 4-in. tubes.
Two Hor. Tub. Boilers, 4½ ft. x 13½ ft., 43 4-in. tubes
One Locomotive Steel Boiler, 30 h. p.

MACHINISTS' TOOLS.

Eleven Lathes, 22 in. x 12 ft. New.
Five Lathes, 18 in. x 8 ft. New.
One Lathe, 17 in. x 8 ft. Lincoln.
Five Lathes, 16 in. x 6 ft. Wood & Light.
One Lathe, 16 in. x 6 ft. Blaisdell.
Two 6-in. Shaping Machines. Gould's.
One Planing Machine, 36 in. x 8 ft.
One Milling Machine, No. 4. Wood & Light.
One Upright Drill, 36 inch.
One Burleigh Rock Drill, No. 4. New.
One Hotchkiss Compressed Air Hammer, 40 lbs.
One Pipe Cutting Machine.
One Styles & Parker Foot Press.
One Bliss & Williams Foot Press.
One Peck, Stow & Wilcox Foot Press.
One Cameron Steam Pump, No. 2.
One Knowles Special Pump, No. 7.
One 6 in. Tapping Machine. D. Saunders' Sons.
One Daniels Planing Machine.
One 100-ton Hydraulic Press and Pump.
One Root Engine.
One Pipe Cutting Machine.
One pair Paper Rolls.
A large stock of Shafting, Pulleys, Hangers, Vises (Wrought and Cast), and other Miscellaneous Machinery.

J. GRAY'S MACHINERY DEPOT,
37 Dey Street, New York, U. S. A.

A Mechanical Engineer,
a good draughtsman, thoroughly acquainted with figuring strains, &c., and conversant with furnace work and machinery in general, is open for employment.
Address, ENGINEER,
Care J. KENNEDY, Box 129,
Braddocks, Pa.

Bissell & Welles,
Wholesale Hardware Auctioneers
83 Chambers and 65 Reade Sts., N. Y.
Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and importers.

Wanted.

$3000 to $5000 Working Capital
(with or without services), to work a valuable Magnetic Iron Ore Mine that will pay 50 per cent. on the investment. Only those with cash and meaning business address, MAGNETIC,
Office of *The Iron Age*, 220 S. 4th St., Phila., Pa.

Wanted.

An Experienced Mechanical Draughtsman.
Address, THE BURDEN IRON CO.,
Troy, N. Y.

Wanted.

A competent man to take charge of a first-class charcoal furnace as founder. No application will be considered without good reference as to character, ability and experience.
Address, H.,
Office of *The Iron Age*, 220 S. 4th st., Phila., Pa.

Wanted.

A First-class Founder for a Coke Furnace.
Address, R. H. LEE, Supt.,
Lowistown, Pa.

WANTED.—By a practical Rolling Mill Manager, one thoroughly experienced in the manufacture of all kinds of malleable iron, especially that of plate and merchant iron, a situation as superintendent, or would take a good position as an assistant. Good references, if needed. Address, J. W. 657 Main street, Paterson, N. J.

WANTED—Situation as Roll Turner. Experienced on all kinds of shaped and bar iron. Best references. Address ROLL TURNER,
Office of *The Iron Age*, 220 S. 4th st., Phila., Pa.

WANTED—A position as Clerk or Bookkeeper or Salesman in some live Eastern town. Have had four years' experience. Best of reference given. Address, EASTERN,
Office of *The Iron Age*, 83 Reade St., New York.

WANTED.—Position as superintendent. Have occupied that position and contractor in a private armory for over 10 years. Is a practical machinist, tool maker and designer of special machines and tools for interchangeable work. Can give the best of references.
Address, DESIGNER,
Office of *The Iron Age*, 83 Reade St., New York.

A GENTLEMAN, 40 years of age, desires to make a connection with a manufacturing or mercantile house, as agent or manager of a branch store or any other responsible position. He is familiar with accounts, and can keep and audit books. Can render valuable services to parties who wish him, and furnish first-class Boston references. Has no objection to living in another city.
Please address, T. H. G.,
Room 3, Studio Building, Boston, Mass.

A YOUNG MAN wants a position as traveling salesman in a first-class Hardware House; with 9½ years' experience in the General Hardware business.
Address, Box 93, Lewistown, Pa.

A MAN who has a thoroughly practical knowledge of the iron trade in all its branches, 12 years' experience as roller and 6 years as assistant superintendent, desires a position; will be disengaged in two weeks.
Address, VULCAN,
Office of *The Iron Age*, 83 Reade St., New York.

A GERMAN ENGINEER, speaking English, many years manager of an important steel works in Germany, seeks a situation as manager for Bessemer, Siemens or Thomas steel manufactory. Competent to establish and carry out works for the Thomas process. Highest references. Good testimonials. Replies to No. 43-30, office of THE IRONMONGER, 42a Cannon street, London, England.

FOR SALE CHEAP.—Foundry, Machine, Blacksmith, Boiler and Wood Shops, with engine and boiler. Line shafting and pulleys, Mackenzie cupola and blower, forges, &c. Address,
E. M. BIRDSALL, Penn Yan, N. Y.

Sanderson Bros. Steel Co.
Forty shares for sale at a discount.
EDWARD FRITH & SON,
241 Pearl street, New York.

Special Notices.

FOR SALE.—Machinery in Store.

One 8 in. swing Drill Lathe 4 ft. bed, hollow spindles.
One 8 x 12 Portable Engine and Boiler.
Two 8 x 12 Stationary Engines.
Three 9 x 12 Stationary Engines, link motion, suitable for hoisting purposes.
One Cooper Steam Pump, 9 in. steam, 4 in. water, 14 in. stroke. The above are all second hand, refitted, and will be closed out cheap.
Wood-working Machinery, Knowles' Steam Pumps, Fan and Cupola Blowers, Exhaust Fans, Centrifugal Pumps, Harrington's Screw Hoists. Emery Goods and manufacturers' supplies. The celebrated PHŒNIX STEAM ENGINES, 15 to 50 horse-power. Second to none, and 20 per cent. cheaper than any others.

I. H. PRATT, 15 S. Water St., Cleveland, O.

NOTICE.

TO THE HARDWARE TRADE,
Retail and Wholesale.
Before buying, send to me for quotations. Will give special figures lower than market rates on a large line of Shelf Hardware and Tinware.

A. W. WHEELER,
141 Lake St., Chicago.

NOTICE!
SPECIAL SALE OF
CUTLERY.
SEE ADVERTISEMENT ON PAGE 10
OF
BRADFORD & ANTHONY, Boston.

Superintendent Wanted.
A man thoroughly competent to manage an establishment consisting of Machine, Pattern and Blacksmith Shops, and Iron and Brass Foundry, employing 75 men, manufacturing steam machinery, and doing general job work.
Address, JOHN M. MORGAN,
Care of B. F. HARRIS,
No. 3 Exchange street, Rochester, N. Y.

Wanted.

A Blast Furnace Founder who has had experience in the use of Anthracite Coal in Blast Furnaces.
Address, FOUNDER,
P. O. Box 3465, New York City.

Wanted.

By an engineer of extensive experience, thorough knowledge, exemplary habits and satisfactory personal and professional credentials, a position as superintendent or manager of an iron or steel rolling mill. A thorough, practical acquaintance with all departments of rolling mill work guaranteed. Address, MANAGER,
Office of *The Iron Age*, 83 Reade St., New York.

Wanted.

A good practical mechanic, capable of taking charge of the inside work of a Bolt and Nut Factory. He must furnish good reference.
Address, LOCK BOX 1746,
Youngstown, Ohio.

Wanted.

A Medium Sized Rolling Mill Building
in good repair. In answering advertisement give size, how long built, present condition and price asked. Address, T. R. McKILLIP,
72 Washington St., Chicago, Ill.

Wanted.

A First-class Metal Salesman.
Best of reference required.
Address, E. N.,
Office of *The Iron Age*, 220 S. 4th St., Phila., Pa.

Wanted.

A Good Second-hand 14 in. x 14 in. Vertical Engine,
Slide valve or cut-off.
Address, W. S.,
Office of *The Iron Age*, 220 S. 4th st., Phila., Pa.

Vertical Boring and Turning Mill
Wanted,
new or second hand, to swing 6 to 8 feet. State maker, time of delivery, price, age, condition and where it can be seen.
Address, STOKES & PARRISH,
30th and Chestnut sts., Philadelphia.

Wanted.

To arrange with responsible parties having proper facilities and experience for the manufacture of some improved wood-working machinery, destined to meet extensive sales when thoroughly introduced. For further particulars, address
B. H.,
Office of *The Iron Age*, 83 Reade St., New York.

Wanted.

An experienced man to superintend lead smelting, calciners and stock furnace process. Apply with reference, stating salary expected.
DESLOGE LEAD CO.,
Bonne Terne,
St. Francois County, N. C.

Special Notices.

SECOND-HAND & NEW MACHINERY
September 7, 1881.
A lot of New and Improved Machinists' Tools, for future delivery.
The following for prompt delivery:

1 Pit Lathe, 16 ft. swing by 30 in. face, has gear-cutting attachment. Second hand.
1 19 in. x 8 ft. Engine Lathe. New.
3 19 in. x 10 ft. Engine Lathes. New.
1 20 in swing, 13 ft. bed. Engine Lathe. Second hand.
1 21 in. swing, 10 ft. bed Engine Lathe, with Turret Head. Second hand.
1 15 in. swing, 6 ft. bed. Engine Lathe. Second hand.
1 14-in. swing, 7½ ft. bed, Screw-Cutting Lathe. New.
1 12-in. sw., 4 ft. bed, Screw-Cutting Lathe. Sec'd hnd.
1 12-in. sw., 5 ft. bed, Screw-Cutting Lathe. Sec'd hnd.
1 12-in. sw., 6 ft. bed, Screw-Cutting Lathe. Sec'd hnd.
3 12 in. x 4½ ft. Hand Lathes, set over.
1 16 in. x 5½ ft. Hand Lathe, 6 in. Chuck.
1 10 in. x 3 ft Hand Lathe, 3 in. Chuck.
1 9-in. x 3 ft. Hand Lathe, 4½ in. Chuck.
1 9-in. x 3 ft. Hand Lathe.
2 7-in. x 3 ft. Hand Lathes.
1 4-in. x 2½ ft. Foot Lathe. Second hand.
2 7-in. x 2½ ft. Foot Lathes. Second-hand.
1 9-in. x 2¾ ft. Foot Lathe, 3 Chucks and Vise.
1 Waltham Watch Co. Lathe with Chucks.
1 Round Arbor Fox Lathe. Nearly new.
1 Second-hand Fox Lathe, 8q. Arbor with Leaders.
1 2 ft. x 12 in. Iron Planer. Second-hand.
1 Crank Planer, 12-in stroke. Fine order.
1 12-in. Shaping Machine, Ohl make. New.
1 6-in. Shaping Machine, Heavy. Second-hand.
1 9-in. Hewes and Phillip's Shaping Machine. New.
1 4-Spindle Drill. Almost new.
2 Wall Drills, heavy. Second-hand. 60 and 72 in.
1 Pratt & Whitney Cam Cutter, 2 heads. Second-hand.
2 Milling Machines, Lincoln pattern. Second-hand.
2 Manhattan Arms Co. Millers. Second-hand.
2 Pond Index Milling Machines, Vise and Centers.
1 Face Milling Machine. Second-hand.
1 Pond's Double Milling Machine. Second-hand.
1 Garvin Milling Machine. Second-hand.
1 Gun Butt Milling Machine. Second-hand.
1 Valve Milling Machine, nearly new.
1 Screw Head Slotter. Second-hand.
5 Second-hand Profiling Machines.
2 Cock Grinding Machines. Second-hand.
1 Vertical Centering Machine, nearly new.
4 Emery Grinders. Second-hand.
1 Schlenker Bolt Cutter. Second-hand.
1 Pipe Cutting Machine. Second-hand.
1 Pulley Polishing Machine. Second-hand.
1 Bolt Pointing Machine. Second-hand.
3 Pulley Forcing Machines. Second-hand.
1 Horizontal Drilling Lathe, 24 in. swing, 19 ft. bed.
1 Upright Boring Bar, 4¼ in. diam., Self-feed, 2d-hand.
1 Hor. Boring Bar, 12½ in. diam., Self-feed, 2d-hand.
1 Horizontal Boring Machine. Second-hand.
1 Broaching Machine. Second-hand.
1 Gun Stock Machine. Second-hand.
4 Gun Reaming Machines. Second-hand.
1 Rifling Machine. Second-hand.
1 Barrel-Boring Machine. Second-hand.
1 Stiles & Parker Punch Press. Second-hand.
1 Betts, No. 2, Power Punch. New.
7 Double-Acting Presses, No. 3, nearly new.
4 Single-Acting Presses, for power, nearly new.
12c Foot Presses, nearly new.
1 Bliss & Williams' Power Punch, nearly new.
1 Medium Power Punching Press. Second-hand.
2 Small Power Punching Presses. Second-hand.
1 Foot Punch, with bench. New.
1 Taft's Power Shear, 4 in. blade, nearly new.
4 Grind Stones and Frames. Second-hand.
1 Jeweler's Power Roller. Second-hand.
1 Iron Rattling Mill. Second-hand.
1 Richards' Indicator.
1 Crane, second-hand, 20 ft. jib.
1 8 x 12 Horizontal Engine. New.
Lot of Forges, Old Lathes, Planer and Lathe Tools, Mandrels, Blacksmith and other Tools; also, some Wood-Working Machinery.
Cold-Rolled Shafting, Pulleys, Hangers, Couplings, &c., always in store.

The Geo. Place Machinery Agency,
121 Chambers and 103 Reade Sts.,
NEW YORK.

For Sale.

An old established manufacturing business paying a large profit on investment; only reason for selling, the parties wish to engage more largely in the iron business.
Address, 99 Ontario street, Cleveland, O.

For Sale.

320 Acres of Valuable Coal and Mining Land,
in the lower part of Ward township, Hocking County, Ohio, on a branch of the C. & H. V. R. R.
Address, W. D. CARTER,
Newark, N. J.

FOR SALE.
Eight H. P. Portable Hoister, J. S. Mundy; 80 H. P. Horizontal Engine; new Vertical Boiler, 48 in. x 10 ft., 124 tubes; 6 x 8 Double Engine, link motion; 18-in. x 12 ft. Lathe; 3-column Drills; Root Blowers, Nos. 1 and 5; 12 x 12 Vertical Engine, extra strong build; 6 Hangers, 2 7-16; 20-inch Drop; Coppersmith Shears, Heavy Platform Hoist.
A. G. BROOKS & WINEBRENER,
261 N. 3d st., Philadelphia.

FOR SALE LOW.—ENGINE.
A Vertical High-Pressure Steam Engine, complete. Cylinder, 24 in. by 48 in. Built by A. J. Sweeney & Son. Can be seen in daily use at our nail factory.
LA BELLE IRON WORKS,
Wheeling, West Va.

MACHINERY ON HAND FOR SALE.

One Horizontal Slide-Valve, Center-Crank, 20 Horse ENGINE (8 x 12); good as new, with Pulley and Fly-Wheel; has double-link motion; can be run in either direction. Price, $200.
One Horizontal Slide-Valve, Center-Crank, 15-Horse ENGINE (8 x 12), with Pump, Heater, Pulley and Fly-Wheel, in good repair. Price, $175.
One Horizontal Slide-Valve, Side-Crank, 25-Horse ENGINE, with 6-foot heavy Band Wheel, Governor and independent Pump. Price, $250. In good order; used about two years.
One Horizontal, nearly new, Lord, Bower & Co.'s 15-Horse (9 x 12), Rolling-Valve, Side Crank ENGINE, with Pulley and Fly-Wheel, Huntoon Governor and independent Boiler Feed Pump; a bargain. $300.
One Portable ENGINE and BOILER, complete, 10-Horse (6 x 12); modern design, just been thoroughly repaired. Price, $325. Ready for use.
One 8-Horse Baxter ENGINE and BOILER; used five years; newly repaired. Price, $400.
One Upright ENGINE and BOILER, Springfield, O., make, 7-Horse (6 x 8); used only one week; sold because owner has gone into other business.
One new Upright 8-Horse ENGINE (6 x 9), with Governor, Pump and Heater. Fly-Wheel and Pulley. Price, $190.
One Earle STEAM PUMP, 1¼-inch suction, 6-inch stroke. Price, $160.
One STEAM PUMP, 1¼-inch suction, 6-inch stroke; will put in good order. $60.
One Torrent STEAM PUMP, new, No. B, ¾-inch suction. Price, $25.
Six BOILER FEED PUMPS, new, with tight and loose Pulleys. $38 each.

YORK & SMITH, Cleveland, Ohio.

Notice.

The undersigned firm would be pleased to accept the representation of first-class firms manufacturing machinery. Address,
J. S. LIZARS & CO.,
Manufacturers of Shilds & Lizars' Feed Water Heater and Purifier, and dealers in New and Second-hand Machinery, 33 Fifth Avenue, cor. Lake street, Chicago, Ill.

The Sherman Process Co.
9 Pemberton Square, Boston, Mass.,
Issue Licenses to use the Process for the Manufacture of Iron and Steel
In the Bessemer Converter, Crucible, Siemens Martin, Puddling, Blast and Cupola Furnaces.
The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working
See page 27 of *The Iron Age* of Oct. 25th, 1877.

Special Notices.

JOB LOT.
ELEY BROTHERS'
GENUINE BLUE CARTRIDGE CASES,
Twelve Gauge.
The best paper shell in the market. For sal cheap. Supply limited.
ALFRED FIELD & CO.,
93 Chambers St., N. Y.

HEAVY IRON WORKS WANTED.
An Eastern Manufacturing Company, doing a profitable business in heavy wrought iron structures, the manufacture and sale of which they control for the United States and Canada, wish to establish additional work, located in the West, South, Pacific Coast and Province of Ontario. Must have first-class freight advantages for receiving rolled structural and merchant iron. Address
WM. O. DOUGLAS, Binghamton, N. Y.

For Sale.

The Little Schuylkill Rolling Mill,
at Milldale, Schuylkill County, Pa., near Port Clinton, on the line of the Philadelphia and Reading Railroad, consisting of a Merchant Bar Mill in complete running order, with a splendid water power sufficient to run the mill two-thirds of the year. Engines, Boilers, Foundry and Machine Shop, with Lathe for turning rolls, and all other appurtenances necessary to commence operation at once. Together with dwellings, stables and large tract of land, to be sold low if applied for soon. For further particulars address or apply to
J. O. RICHARDSON,
No. 232 Dock street, Philadelphia.

For Sale.

Two Corliss Condensing Beam Engines,
32 in. x 72 in. cylinders. Address,
THE HARTFORD ENGINEERING CO.,
Hartford, Conn.

For Sale.

Stock of Hardware, Fixtures, and Good Will of the subscribers, in the city of Norwich, Conn.
Only one other hardware store. Population 21,000.
FULLER & PARISH.
August 1, 1881.

For Sale.

Hardware Stock and Trade in Michigan.
Those wishing to buy a complete stock and fine trade, and in a beautiful place to live, will find a rare chance by addressing S.,
Office of *The Iron Age*, 83 Reade St., New York.

For Sale.

Hardware Stock and Business.
Located in one of the best towns of Northeastern Pennsylvania. Stock clean and well assorted, suited to the requirements of the trade where located. Business of 30 years' standing. For terms and full particulars apply to
JAMES S. KUHN, Towanda, Pa.

For Sale.

Ten Double Acting Power Punching Presses, A1 order. Eight Single Acting Power Punching Presses, A1 order. Most of the double acting presses are the No. 3 Waterbury Press; the single acting, No. 2. One large Bliss & Williams Punching Press. One hundred and twenty-seven Foot Presses in A1 order, most of them square slides. Address, THE GEORGE PLACE MACHINERY AGENCY, 121 Chambers and 103 Reade sts., N. Y.

For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas.
Address HARDWARE,
Box 366, Salina, Kansas.

For Sale.

One New Peck Lifter and Drop,
complete. Inquire of
BRADLEY & COMPANY,
Syracuse, N. Y.

For Sale.

SECOND-HAND
DROPS AND LIFTERS
BEECHER & PECK,
Lock Box 122, New Haven, Conn,

For Sale.

One 20-inch Engine, one 100-horse Locomotive Boiler; two large Pulleys, 30-inch face; a 20-inch Rubber Belt, &c. All in good order, and will be sold for less than value to make room for larger. Can be seen running at
AKRON RUBBER WORKS,
Akron, Ohio.

For Sale.

The Industrial Works of Shamokin, owned and successfully carried on for a number of years by the late Wm. Brown, deceased, consisting of Foundry and Machine Shop, and a large stock of Patterns regarded as part of the property. Boiler Shop, Blacksmith Shop and Factory for the manufacture of heavy coal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rail, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. The works are now running, but in a very short time possession can be given. Easy terms of payment are offered to suit a purchaser of limited capital.
Offered for sale by
WM. McILVAIN & SONS,
Reading, Pa.

For Sale.

One No. 4 "Fales & Jenks" Rotary Force Pump.
One No. 1 "Gillespie" Rotary Force Pump, with gates and valves.
Both in good order. Will be sold cheap for cash. Immediate delivery.
COE BRASS MFG. CO.,
Torrington, Conn.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Sept. 28, 1881.

The depressing influences of President Garfield's death, the observance of the Hebrew holidays and the unseasonable heat, have not been without their effect in trade circles. Business has been interrupted, but the causes operating were recognized as of a transient nature, giving no indications of permanent derangement. Values throughout have been firmly maintained. First in importance among new elements entering into business calculations is the programme of Secretary Windom, announced on Saturday, the effect of which was to stimulate purchases of securities on the Stock Exchange at the highest prices of the week.

The following circular has just been issued by H. F. French, Acting Secretary of the Treasury, for redemption of bonds of the loan of July 17 and August 5, 1861 (105th call), continued at 3½ per cent. from July 1, 1881.

By virtue of the authority conferred by law upon the Secretary of the Treasury, notice is hereby given that the principal and accrued interest of the bonds herein below designated will be paid at the Treasury of the United States, in the City of Washington, D. C., on the 24th day of December, 1881, and that the interest on said bonds will cease on that day, viz.:

Registered bonds of the acts of July 17 and August 5, 1861, continued during the pleasure of the government under the terms of circular No. 142, dated April 11, 1881, to bear interest at the rate of 3½ per cent. per annum from July 1, 1881, as follows:

$50, No. 1749 to No. 1810, both inclusive.

$100, No. 12,431 to No. 12,700, both inclusive.

$500, No. 9005 to No. 9220, both inclusive.

$1000, No. 44,573 to No. 45,729, both inclusive.

$5000, No. 15,311 to No. 15,530, both inclusive.

$10,000, No. 25,790 to No. 27,860, both inclusive.

Total, $20,000,000.

Many of the bonds originally included in the above numbers have been transferred and cancelled, leaving outstanding the amount above stated. Parties transmitting bonds for redemption should address to the "Secretary of the Treasury, loan division, Washington, D. C.," and all the bonds called by this circular should be assigned to the Secretary of the Treasury for redemption.

Where checks for payment are desired in favor of any one but the payee, the bonds should be assigned to "The Secretary of the Treasury for redemption for account of —— (here insert the name of the person or persons to whose order the check thould be made payable).

The following circular for redemption of United States 3½ per cent. bonds has been issued: "Notice is hereby given that during the weeks ending October 1, 8, 15, 22 and 29, 1881, the department will redeem, at the office of the Assistant Treasury of the United States, at New York, paying par and interest accrued to the date of redemption, any of the United States bonds continued to bear interest at 3½ per cent. per annum, called or uncalled, to an amount not exceeding $2,000,000 in each week."

The Secretary of the Treasury announces that his future calls for bonds will be confined to the 6 per cents, extended until the whole issue of $178,000,000 is exhausted. A Washington telegram says that this arrangement does not give satisfaction to certain of the national bankers, who expected the long 4s and 4½s to be bought for the sinking fund at current premiums. They have now to pay these premiums themselves in substituting the 4s or 4½s for the 3½s redeemed and redeemable. In Wall street, too, it is said that the Treasury programme fails to meet expectations, immediate cash disbursements having been looked for instead of the promise of a heavy payment December 24, with no provision for prepayment on any terms as an offset to the Treasury accumulations.

Call loans have been obtained as low as 3 per cent., but within the last two days the rate has touched ½ of 1 per cent., interest and commission, with 5 @ 6 per cent. as a rule. Little commercial paper can be sold at less than 6 per cent. The demand for currency South and West continues.

The posted rates for bankers' sterling were reduced on Tuesday to $4.80½ for 60-day and $4.84 for sight, in consequence of the pressure of cotton bills. The market is heavy. Rates do not yet show a profit in importing gold, although it is reported that £50,000 gold was withdrawn from the Bank of England to-day for shipment here.

The importations of specie and bullion at this port during the week ending Sept. 23 were $103,536, consisting of $85,403 in gold and $18,133 in silver, as against a total of $4,546,199 for the week ending Sept. 25 last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year:

	Since January 1	
	1881.	1880.
Gold	$42,913,270	$27,001,686
Silver	2,147,435	3,879,131
Total	$45,060,705	$30,880,817
	Since August 1	
	1881.	1880.
Gold	$14,289,011	$25,027,319
Silver	393,506	684,625
Total	$14,682,517	$25,711,944

The weekly bank statement was unexpectedly favorable, and showed a gain of $1,008,150 in surplus reserve. Besides a moderate contraction in loans, the statement showed a gain of $495,400 in legal tenders and a loss of only $95,300 in specie. The banks now hold $1,462,275 above the 25% rule.

Stocks have been active this week, but irregular, and, as a rule, have held their own. Trunk line shares advanced on reports that the railroad war would soon terminate, but thus far nothing has transpired indicating such a result. Reading, too, moved sharply upward, on a report that Vanderbilt was buying heavily to control the coming election. President Arthur's proclamation convening the Senate in extra session, October 10th, had a good effect on financial credits. The principal stock changes within the week are as follows: Advanced—Delaware, Lackawanna and Western, 1⅛; Central Pacific, 4⅛; Wabash Pacific preferred, 1⅝; Cleveland, Columbus, Cincinnati and Indianapolis, 2; Illinois Central, 1; Morris and Essex, 2¾; Omaha, ⅞; Missouri Pacific, 1; Missouri, Kansas and Texas, 1⅝; Philadelphia and Reading, 5½. Declined—Canada Southern, 1¼; New York, Lake Erie and Western, 1; Western Union, 1⅝; St. Paul, 1½; Lake Erie and Western, 2; Lake Shore, 1⅜; Union Pacific, 1⅛; Michigan Central, 3⅛; Hannibal and St. Joseph preferred, 1½.

The steamer City of Richmond brought $450,000 in gold bars, and the Donau is nearly due with $600,000 in bars consigned to the Bank of British North America.

The exports of domestic produce from New York for the week ending last night amount to $8,954,000. The weekly return, usually issued from the Custom House on Tuesdays, is unavoidably delayed.

United States bonds at the close were:

	Bid.	Asked.
U. S. 4½'s 1891 registered	113⅜	113⅝
U. S. 4½'s 1891 coupon	113⅜	113⅝
U. S. 4's 1907 registered	116⅛	116¾
U. S. 4's 1907 coupon	117⅛	117¾
U. S. Currency 6s 1895	130	—
U. S. Currency 6s 1896	131	—
U. S. Currency 6s 1897	132	—
U. S. Currency 6s 1898	133	—
U. S. Currency 6s 1899	134	—
Sixes continued	100½	100⅞
Fives continued	101⅛	101¼

The following is an analysis of the bank totals of this week compared with that of last week:

	Sept. 17.	Sept. 24.	Comparison.
Loans	$333,625,800	$332,672,300	Dec. $953,500
Specie	65,079,700	64,984,400	Dec. 95,300
Legal t'd'rs	14,641,500	15,037,200	Inc. 495,400
Tot. reserve	79,641,500	80,041,600	Inc. 400,100
Deposits	306,749,500	314,317,300	Dec. 2,432,200
Reserve required	79,187,375	78,579,325	Dec. 608,050
Surplus	454,125	1,462,275	Inc. 1,008,150
Circulation	19,785,800	19,765,200	Dec. 20,600

MINING STOCKS.

The closing quotations for mining stocks are as follows:

	Bid.	Asked.
Amie	29	34
Alice	6.00	6.50
Alta Mont	1.90	2.00
Bechtel	85	1.00
Bell Isle	14	....
Bodie	7.00	8.50
Buckeye	....	9
Bulwer	2.50	3.00
Bassick	....	13.00
Bull Dom	1.40	1.50
Bonanza C	....	12
Boulder	21	....
Boston C	....	11
Big Pittsburgh	1.20	....
Bradshaw	90	95
Calaveras	15	....
Caledonia	1.35	....
California	1.05	1.15
Climax	35	....
Consolidated Imperial	20	....
Consolidated Virginia	3.95	3.80
Chrysolite	....	8.75
Cent. Ariz	....	2.00
Cherokee	1.45	1.50
Dahlonega	5	6
Eureka C	....	27.50
Findley	27	30
Fa. DeSmet	7.25	8.50
G. Placer	37	....
Granville	4	5
Goodshaw	....	40
Great Eastern	15	....
Green Mountain	....	5.50
Hukill	69	....
Horn Silver	14.12½	15.12½
Hibernia	34	....
Iron Silver	2.40	....
Lacrosse	....	26
Leadville	1.55	1.70
Little Pitts	2.60	....
L. Chief	1.30	1.35
Miner Boy	45	....
Navajo	....	65
Nor. Belle	13.00	....
N. Bell I	32	....
Ori. and Mil	81	....
Rappah'k	17	....
Robinson	13.62½	13.87½
Red Eleph	18	....
S. Nevada	24.00	....
Silver Cliff	3.00	....
Sutro	1.60	1.65
Spr'g Val	2.80	3.00
Stormont	2.70	2.80
South Hite, new	38	45
St. L. 1 and 4	88	....
St. L. 2 and 3	3.90	3.95
Tip Top	....	6.00
Tioga	45	....
Union Con	14.75	....
Unadilla	8	9

GENERAL HARDWARE.

The demand for General Hardware continues in the same active condition so frequently noticed of late, and manufacturers are pressed to their utmost capacity to meet the requirements of their customers. The tone of the market with regard to values is very firm, and the only changes announced are advances over former figures.

Foreign Hardware is in fair request, and prices have undergone no change during the week.

The demand for Nails is not quite as active as it was prior to the late advance, but still a fair business is transpiring and the card rate is firmly adhered to, at least so far as first hands are concerned; it is possible, however, that some Nails might be had from second hands (that were purchased previous to the advance) at a shade below the market price. We quote 10d to 60d, $3.30 @ $3.40, net, according to size of order. The Western Nail Manufacturers' Association, at a full meeting held in Pittsburgh to-day, advanced the card rate to $3 25, subject to the usual terms and discounts. The reports read at the meeting showed that the demand for Nails was unprecedented in the history of the trade.

The manufacturers of Cordage issued the following revised price list under date of the 23d instant, showing an advance in the price of Manila Rope of ½ cent per pound, and a decline of ½ cent per pound on Sisal. The trade discount remains as heretofore:

MANILA ROPE.

	Cts. ℔ D.
1¼ inch cir. and upwards	15½
12 thread, or ⅜ diameter	15
6 and 9 thread, or ¼ and 5-16 diameter	16½
Hay Rope, 2, 3, 4 or 5 thread	15½
Bolt and Point Rope	17
Tarred Rope and Lath Yarn	15
Stave Leather and Hop Twine	16

SISAL ROPE.

	Cts. ℔ D.
1¼ inch cir. and upward	10
12 thread, or ⅜-inch diameter	10½
6 and 9 thread, or ¼ and 5-16 diameter	11
Hay Rope, 2, 3, 4 or 5 thread	10
Tarred Rope and Lath Yarn	9½

We have received the following circular:

Office of DURRIE & MCCARTY,
97 Chambers and 81 Reade street, N. Y.
NEW YORK, September 24th, 1881.

The copartnership heretofore existing between Horace Durrie and John C. McCarty, under the firm name of Durrie & McCarty, was dissolved, on the 13th instant, by the death of Horace Durrie. The undersigned have formed a copartnership, and will continue the business from and after this date, under the same style and firm name.

FRANK DURRIE.
JOHN C. MCCARTY.

Russell & Erwin Mfg. Co. have made the following changes in goods of their manufacture, under date of September 20:

Catalogue page.		Discount per cent.
313,	Shutter Bars, No. 8030, 8031	60&10
320,	Sash Lifts, No. 8011, 8012	60&10
327,	Show Case Catches, No. 5, change list, $2.40	40
330.	Screw Door Catch, change list, No. 8500, $5.60; No. 8501, $8	45
333,	Chest Handles, Nos. 11, 12 and 13	40&10
340,	School-house Hooks, Nos. 50&60	40
344,	Pulleys, change list	40

Nos.	470	371	373
	$2.00	2.40	2.80

352½,	Chain Bolts, No. 230	40&7½
360¾,	Lever Door Bells	45
360½,	Levers for Door Bells	45
372,	Ox Balls, change list	30

No.	1	2	3	4
Per gross	$10.50	12.50	21.00	25.00
No.	56	57	58	59
Per gross	$5.50	6.50	8.00	9 50

A meeting of the manufacturers of Tinned and Enameled Hollow-ware was held at the Osborne House, Auburn, N. Y., on the 14th inst., at which the prices and terms heretofore existing were confirmed.

The Trenton Lock and Hardware Co., Trenton, N. J., have issued a very handsome supplement to their 1880 illustrated catalogue. It contains over 90 pages, illustrating new goods, such as Locks and Latches, Bronze Metal, Nickel-plated and Bronzed Iron Hardware, &c. The supplement is accompanied by a condensed price list and discount sheet to apply to their 1880 catalogue, and this supplement. The goods can be seen in this city at the warehouse of their agent, James Marshall, No. 48 Warren street; their Philadelphia agents are James M. Vance & Co., No. 211 Market street.

Penn Hardware Company, Reading, Pa., have advanced the prices of their entire line of Hardware 10 per cent. Horace F. Sise, No. 100 Chambers street, is their agent.

Reading Hardware Company have issued, under date of the 20th inst., the revised discount sheet which we print below, and which is subject to an extra discount of 10 per cent. for prompt cash:

READING HARDWARE COMPANY DISCOUNT SHEET, 1881.

Page in 1881 Catalogue.		Discount per cent.
1-4,	Apple Parers	5

	Victor.	'78	'76	Gem.	'72
Per doz.	$9.00	9.50	7.50	6.80	5.65

5,	Measuring Faucets	20
5,	Kitchen Grindstones	33⅓&20
6, 7,	Tobacco Cutters, change list, No 10, $31	50
8,	Coffee Mills	30
8,	Nut Cracks	25&10
9,	Scale Weights	40
9-11,	Scales, Tea, Butchers' and Counter	37½
12-15,	" Standard and Steel Bearing	40
16, 17,	Brackets, Store Shelf	55
18, 19,	" Cottage and Rosette	60
20-23,	Flower Pot Brackets	35
24,	Butts, Mayer's	50
24,	" Parliament, No. 12	55
25,	" Fast Joint, Nos. 14 and 16	40
26, 27,	Butts, Loose Joint, Nos. 18, 20, 22 and 24	50
28,	" " No. 25, complete with Screws	45
29, 30,	Butts, Loose Joint, Nos. 27 and 26	75
31,	" " No. 45	70&5
32, 33,	Butts, Loose Pin Nos. 28 and 31	50
34, 35,	" " Nos. 32 and 33	55
36,	" " No. 34, complete with Screws	50
37,	Butts, Loose Pin, No. 35	70&10
38, 39,	Butts, Loose Pin, Nos. 36 and 37	75
40, 41,	" " Nos. 38 and 40	70
42-44,	" Bronze Metal, Nos. 60 and 65	60&10
43,	" " Nos. 70	65
45,	" " No. 75, add No. 75, 5½ x 5½, $9.50	60&5
46,	Butts, Inside Shutter	60
47,	" "	55&5
48,	Hinges, Gravity Blind	66⅔
48,	" Harbster's Shutter	60&5
49, 50,	Hinges, Lull & Porter's and Alston's Shutter	66⅔
51,	Hinges, Palmer's Blind	45
52, 53,	Hinges, Surface, Mortise and Blind Door	30
54,	Shutter Catches	60
54, 55,	Shutter and Blind Fasteners, and Turnbuckles	45
56-59,	Gate Hinges, New England, State and Gate Latches	45
60,	Bolts, Tower and B. K. Barrel	50
61,	" Flat and Cased Shutter	55
62,	" Spring, Square and Square Necked	50
62,	" Staples	60
63,	" Excelsior Shutter	45
63,	" Acme Shutter	50
64,	" Lever Foot	33⅓
64,	" Spring Foot	70
65,	" Chain	60
66,	" Barrel, Nos, 797 to 805	40
66,	" " Nos. 1803 to 1805	45
67-73,	Bolts, Square, Bottom, Chain and Foot, change list	40

Nos.	615	640	660	665	685
	$3.35	4.35	3.35	4.35	3.65
Nos	690	757	762	760	765
	$4.65	4.00	4.50	4.35	4.85

74,	Bolts, Chain and Square Door	60&10
75,	" Square Door, Nos. 777 to 795	40
75,	" " Nos. 1780 and 1785	60
76, 77,	Bolts, Square Spring, Necked, Flat Ship and Barrel	60
78-80,	Bolts, Flush	65
81,	" "	60
82,	" "	65
83-85,	" "	55
85-89,	Bolts, Flush, Brass, change list	60

Nos.	3715	3710	3715	3720
	$10.00	12.00	14.00	17.00
Nos.	3725	3730	3735	
	$21.00	25.00	30.00	

90, 91,	Bolts, Mortise Door	60
92-97,	Chain Door Fasteners	50
98,	Bolts, Flat Cupboard	25&10
99,	" Flat and Straight	66⅔
100, 101,	Cupboard Latches	33⅓
102, 103,	" Catches	60
104, 105,	" " change list, No. 380, $15.70; No. 385, $15.70	25&10
106,	Cupboard Catches, Nos. 2130 to 2175	60
106, 107,	Cupboard Catches, Nos. 2210, 2215, 2200 and 2205	55
107, 108,	Lever Cupboard, Elbow, Show Case and French Window Catches	60
109,	French Window Catches	25
110, 111,	Cupboard Turns	40
112,	Cupboard Locks	20
113,	Screen Door Catches	40
114,	Door Buttons, Nos. 49 to 54 and Nos. 4070 to 4085	55
114,	Door Buttons on Plates, Nos. 60 to 64	60
114,	" " 4100 to 4110	66⅔
115, 116,	Thumb Latches	40
117,	" " change list, No. 9, $0.75	50
118,	Barn Door Latches	40&10
119, 120,	Store Door Handles	40
120, 121,	Thumb Latches, change list, No. 97, $1.65; No. 102, $1.85	40&10
122-125,	Store Door Handles	40&10
126, 127,	" " "	50
128, 129,	" " "	40&10
130, 131,	" " "	50
132, 133,	" " " and Locks	15
134-137,	" " " " "	30
138-141,	" " " " "	37½
142,	Door Springs	70
142-147,	Door Pulls	60
148,	Letter Box Plates	90
149-151,	Drawer Pulls	55
152-157,	"	50
158,	Lifting Handles, Japanned	55
158, 159,	Lifting Handles, Brass, Chest Handles and Trap Door Rings	60
160, 161,	Chest Handles	55
162-181,	Hooks, Wardrobe, Hat, Ceiling and Hat and Coat	40
182,	Hooks, School House	33⅓
183, 184,	Hooks, Harness and Baggage Check	40
184, 185,	" Clothes Line	45&5
186,	" Chandelier	25&10
187,	" Lamp	55
187,	" Screw	70
187,	" Cabin Door	20
188-191,	" Bird Cage	35
192,	Sliding Door Stops and Shutter Sheaves	60
192, 193,	Sliding Door Rail and Sheaves	55
194,	Pulleys, Brass Screw, Nos 7000 to 7030	60
194-197,	Pulleys, Japanned Screw, Incased. Side, Upright, Ceiling and Swivel	65
198,	Pulleys, Hot House	65
199,	" Dumb Waiter	60
200, 201,	Pulleys, Tackle and Awning	65
202, 203,	" Clothes Line	60
204-218,	" Frame and Axle	25
219,	Sash Rollers	50
219-221,	Organ Rollers, Sash Locks, Props and Window Spring Bolts	40
221,	Window Springs	50
221,	Flush Rings	66⅔
222,	Sash Cord Irons	25
222-224,	Stubs and Plates, Shutter Screws, Lifts and Sash Centers	40
225,	Sash Pull Hooks and Plates	40
225,	Window or Sash Lifts	30
226, 227,	Drawer, Picture and Shutter Knobs	37½
228,	Shutter or Sash Knobs	25
229-231,	Sash Lifts	40
232-235,	Shutter Bars	40&5
236-246,	Sash Fasteners, change list	40

Nos.	754	733	738	741	1724	742
	$2.15	1.05	1.50	2.25	6.75	3.00
Nos.	747	750	755	1747	1750	
	$3.75	3.00	3.75	11.25	10 50	

247,	Ox Balls	50
248, 249,	Barn Door Hangers, Nos. 3 to 8, Nos. 15 to 20 and Nos. 71 to 74	50
248, 249,	Barn Door Hangers, Nos. 23 to 32, Nos. 11 to 14 and Nos 61 to 64	45
250,	Barn Door Rollers	35
250,	" " Pulls, change list, No. 8, $2.20	65
250,	" " Rail, change list, No. 3, $0.03	25
251,	" " Stays	50
251,		
252, 253,	Hay Fork Pulleys	45
254, 255,	Grindstone Fixtures and Friction Rollers	25
256, 257,	Thimble Skeins and Pipe Boxes, Screw Bolts and Wrenches	30
257,	Wagon and Cart Boxes	20
258,	Cabinet Makers' Shaves	35
258,	Saw Clamps, change list, No. 20, $19	40
259,	Bench Screws and Handles, change list	33⅓

	$6.50	8.00	9.50	8.50
Nos.	21	22	23	2

260,	Iron Screw Braces and Plumb Bobs, change list, No. 25, $5	40
261,	Coach Wrenches and Wheels for Store Trucks	37½
262,	Melting Ladles, Well Wheels and Hoisting Pulleys	30
263,	Porch Irons, in bulk, Nos. 2 and 3, 6½ cents; Nos. 4 and 5, 8 cents per pound	25
263,	Porch Irons, in papers, Pump Fixtures and Spouts	25
264 267,	Foot Scrapers, change list	50

	$1.60	3.00	1.75	2.20
Nos.	20	25	4	6

267,	Sash Weights	10
268, 269,	Casters, Store Truck	40
270-273,	" Plate, Piano Forte, French, Bed and Bracket	35
274, 275,	Bed Fasts	25
276,	Head Board Hooks and Eyes, and Pew Back Irons	40&5
277,	Table Leaf Supports and Refrigerator Ventilators	40
277,	Quilting Frame Clamps	50&10
278,	Gong Door and Alarm Bells	25
279-281,	Lever and Pull Door Bells, and Levers for Door Bells	25&10
282,	House Bells and House Bells on Carriages	25
283,	Slide Bell Pulls and Pulley Bell Cranks, change list, No. 7, $0.35	40
284, 285,	Bell Cranks, Bell Spikes, Check Springs, change list, No. 1, $3.60; No. 2, $4.30	25
286, 287,	Window Shade Racks	30
288, 289,	Shade Brackets, Roller Ends, Quoits and Cork Presses	20
289,	Dumb Bells	33⅓
289,	Line Cleats	60&10
290,	Waffle Irons	25
291,	Potato Mashers, Ice Picks, Axes, Can Openers and Fish Scalers	30
292,	Stove Shovels and Spring Coal Tongs	35
292,	Stove Pipe Dampers	50
293,	Stove Cover Lifters	40
294,	Rubber Mops, Lemon Squeezers and Egg Beaters	30
295,	Boot Jacks and Foot Rests, change list, No. 8, $1.80	50
296,	Carpet Stretchers and Lamp Trimmers	25
296,	Scissors and Shears	60&10
297,	Cutting Nippers, Flat Pliers and Tack Hammers	33⅓
298, 299,	Soap Dishes	30
300, 301,	Sad Iron and Coffee Pot Stands	40
302,	Polishing Irons	30
302,	Sad Irons	20
303,	Fluting Irons and Sad Irons and Stands, change list, No. 45, $1.00; No. 50, $1.15; No. 75, $1.30	50
304-306,	Spinners, Scales, Savings Banks, Tool and Toy Floral Sets	30
307,	Floral Sets Nos. 15, 20, 25 and 35	10
307, 308,	Hoes, Rakes, Spades, Forks, Shovels, Hammers and Hatchets	30
309-313,	Match Safes	40&10
314, 315,	Twine Boxes	30
316,	"	40
317, 319,	Paper File Hooks and Paper Clips	40
320-331,	Paper Files, Cancelers, Pen Racks, Paper Weights and Inkstands	40&10
332, 339,	Registers and Ventilators (quoted by letter on application)	

P. & F. Corbin, New Britain, Conn., and No. 81 Chambers street, New York, have issued the following revised discounts:

NEW BRITAIN, CONN., September 20, 1881.

LIST OF CHANGES ADOPTED THIS DAY.

Page in catalogue.		Discount per cent.
76,	Jap. Buttons on Plates	60
77,	Turn " " all	55
85-89,	Gong, Door Bells, Levers and Pulls	55
100,	Cup'd Catches, 3126, 3138, 2147, 2138	45
106,	Screen Door Catches	60
146,	Jap. Chest Handles, Surface	55
146,	" " Flush	60
161-166,	Drawer Pulls	66⅔
178-181,	Sash Lifts, all	60
185-187,	Shutter Bars, all	60&10
188,	Shutter Knobs	50
190,	Cord irons	50
199,	Lamp and Chandelier Hooks	55
204-207,	Coat and Hat Hooks, all	50
217,	School House Hooks	60
	Clothes Line "	65
231,	Axle Pulleys, 1739-1744	45
231-232,	Axle Pulleys, 600-615	50
243-244,	Gate Hinges, &c	45

Subject to the usual discount of 10 per cent. for prompt cash in 30 days.

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

LONDON, Sept. 28, 1881.

Scotch Pig.—The demand for shipment continues unabated, and the returns show a very large increase over the shipments of last year for the corresponding period. Prices continue to advance, our quotations showing a rise over the quotations of last Wednesday of 2/6 on Gartsherrie and Coltness, and 1/ on Glengarnock and Eglinton. The following are to-day's figures:

Gartsherrie, alongside, Glasgow			60/
Coltness	"	"	62/
Glengarnock	"	Ardrossan	54/6
Eglinton	"	"	52/

Lighterage from Ardrossan to Glasgow is 2/ @ 2/6 per ton.

Bessemer Pig.—The demand is heavy, and a very large business has been done. Prices are firmer and higher, to-day's quotations for lots Nos. 1, 2 and 3, equal portions, being 60/, an advance of 6d.

Manufactured Iron.—The demand continues to improve and prices are firmer. A large business has been done. The quotation of Best Staffordshire Bars has been advanced to £7. 10/ @ £8—a rise of 10/ in the range.

Steel Rails.—A fair business is doing under a steady demand. Prices are firm. We quote Ordinary Sections, £6. 5/ @ £6. 10/.

Iron Rails.—Prices are firm, demand steady and business fair. Welsh are quoted £5. 5/ @ £5. 10/.

Old Rails.—Very little business doing, the offerings being light and sales small. Prices are firm. We quote Old Tees £4. 10/, c. i. f., United States ports.

Scrap.—The offerings are moderate and sales small, with prices steady. Wrought is quoted £3. 15/, c. i. f., United States ports.

Freights.—Steam freights from Glasgow to New York are higher, prices to-day being 11/, against 10/ last Wednesday.

IRON.

American Pig.—Very little business has transpired during the week, although we hear of considerable inquiry. The tone of the market is decidedly strong, and the enormous consumption so frequently alluded to in these columns continues without sign of abatement. We quote: Foundry No. 1, $25; Foundry No. 2 X, $23; Gray Forge, $21.

Scotch Pig.—Sales are reported of 350 tons Eglinton, at $22. There is a fair demand for Scotch Pig, but prices, in sympathy with foreign advices, have, for so ne grades, advanced to a point far beyond the views of consumers, and unless the domestic article appreciates very much over makers' present views, it will be difficult to make sales at the new figures. There is no Gartsherrie on the spot, and lots to arrive are held by shippers' instructions at $25. We quote: Eglinton, $21.50 @ $22; Carnbroe, $22.50; Coltness, $26; Glengarnock, $23, and Langloan, $25.

Rails.—The inquiry for Steel Rails is active, but no new business is reported. We quote for next year's delivery, $55 @ $56 for Steel at mill. Iron Rails are in fair request, and are quoted $48 @ $49 at mill for ordinary sections.

Old Rails.—The condition of the market is unchanged since our last writing, and no transaction worthy of mention has been made public. We quote: Ts, $27.50, and D. H., $30.

Scrap.—We quote No. 1 Wrought, $23.50 ex store and from yard for prime selected, $30. No sales are reported during the week, although there is a fair amount of inquiry.

METALS.

Copper.—No sales of Lake Superior to speak of have been effected during the week, the market, though firm, being inactive, in common with all other metals, as was to be foreseen, this being a period of universal mourning, from which business has not yet recovered. The little done has been at 18¼¢ @ 18½¢. Leading manufacturers are well supplied for the remainder of the year from the contracts they made at the time when Copper was at its lowest point of depression of 16¢ in this market. Never, certainly, was there a better chance to lay in a cheap supply precisely at the right moment, and it may be a long time ere such an opportunity offers again. Europe now also enters with spirit into the Copper movement, Best Selected being cabled £69, and Chili Bars, £62. 10/. The statistical position in England and France has gone on improving; the stock is lowering, while the deliveries increase, and the prospect of large shipments from Caili are getting to be slim, that country finding itself in a highly irksome position, for the army of occupation in Peru has to be kept up, and the mining population continues to furnish soldiers. Taxes in Chili are heavy as they are, but in spite of these resources, the finances are getting into a more precarious position, calling either for a £20,000,000 loan, or the issue of more paper money, which will cause the exchange to fluctuate and disturb Copper shipments. Under these circumstances it is not to be wondered at that London develops increased strength in the Copper market. Manufactures are quoted as under: Pit and Hot-rolled Flat Bottoms, 27¢ per pound; Cold-rolled Flat Bottoms and Pit Bottoms, with flange cut,

28¢; Braziers, 26¢ @ 32¢, as to size and weight; Circles, 29¢ @ 32¢; Sheets, 26¢ @ 29¢; Sheathing, 24¢, and Bolt Copper, 26¢.

Tin.—Our market maintains its strong position, and prices are gradually moving up in London and the East Indies likewise. The former has advanced with Straits to £95, cash, spot, and £96. 10/ for afloats, with an active demand and upward tendency. Singapore cables a parity of 22¼¢. About 250 tons have been sold during the week in a wholesale way at 21⅜¢ for Straits, and besides this the jobbing demand is good. We quote at the close, large lines: Straits, 21⅜¢; Australian, 21½¢, and Billiton, 21⅜¢. Mr. Emile Herold, New York, has just received a dispatch calling the London market excited, Straits and Malacca offering from there at £98. 10/, cost, freight and insurance. *Tin Plates* have remained unaltered, but in a jobbing way there is a fair amount of activity. We quote large lines, ordinary brands, per box: Charcoal Bright, $5.75 @ $5.87½; ditto Ternes, $5.25 @ $5.37½; Coke Tin, $5 @ $5.10, and ditto Ternes, $5. Liverpool cables Coke Tin 15/6 and firm. Production is too great, and consumption is not fully capable of coping with it. Thus the stock was diminished some 300,000 boxes in the short space of three months on the other side; yet this has had no effect on prices, but just steadied the market and no more. In the face of these facts, there is no disposition on the part of consumers at this point to increase their holdings. Yet it cannot be denied that Tin Plates at present rates are cheap, comparatively speaking.

Lead.—This metal is forcibly kept inactive by virtue of its extreme scarcity, which will continue for some weeks to come; meanwhile, consumption is enormous all along. The couple of hundred tons Common Domestic sold brought 5¼¢ @ 5⅜¢; the asking price at the close is 5⅜¢ @ 5½¢. There is no Refined Lead here; it costs $5.45 to lay it down here from the West. Consumers think that at such rates they may as well order it from Europe. Mr. Emile Herold, New York, received a cablegram from London, dated September 26, when the Lead market was advancing on the other side under the stimulus of greater activity, English and Spanish Pig being wired £15. 5/, cost, freight and insurance, against £14. 7/6, the lowest previous point this year. Manufactures are quoted as follows: Sheet Lead, 7½¢; Lead Pipe, 7¢; Tin-lined ditto, 15¢; Block Tin ditto, 35¢; Drop Shot, 7¢.

Spelter and Zinc.—Domestic Spelter remains featureless; the trade doing therein is of a dragging kind, and we cannot quote it any better than 5⅛¢ @ 5¼¢, and Silesian, 5⅜¢ @ 5½¢. Nothing of interest is reported with reference to the metal from Europe. *Sheet Zinc* now sells at 7¼¢.

Antimony.—The business transacting is of a jobbing nature merely, but the market remains steady at 14½¢ for Cookson, and 14¢ other brands.

COAL.

In no respect is the condition of the Coal market changed, compared with one week ago, excepting that we are nearer to the return of periodic activity. In common with other trades, Coal has experienced a slight check, from external causes, but it is believed that no change, either in prices or rate of production, will take place for a fortnight to come. Coal is in good demand, and the movement eastward is kept back only by the current high rates of freight, which are $1.40 @ $1.50 to Boston and $1 to Providence. Vessels are in tolerable supply, so that rates may be said to have eased a little. A good fall trade is anticipated with confidence. The quotations are: Lehigh, $4.20 @ $5 for Lump; $4.25 @ $4.45 for Grate, Egg and Stove; Chestnut, $3.90 @ $4. Free-burning Coals, $3.90 @ $4.05 for Lump, Grate, Chestnut and Egg; Stove, $4.20.

Bituminous Coals are in fair demand, and prices firm at present quotations, which is partly due to shortened supplies. Only an occasional boat arrives by way of the Ohio and Chesapeake Canal, so great is the drought. The Pottsville *Miners' Journal* says: "There is a brisk business doing in Egg, Stove and Chestnut—other sizes not in much request, except the regular supplies for the line trade for furnaces and mills. Prices are well maintained, and it is thought there will be a slight advance in October. The meeting to fix the circular rates for next month will not be held until the 30th inst., and its action cannot be definitely stated; but present indications point to an advance of 15 cents a ton on Egg, Stove and Chestnut—other sizes to remain as in last circular." The total amount of bituminous mined for the year is 3,472,388 tons, against 3,006,660 tons for the corresponding period last year, an increase of 405,678 tons. The total tonnage of all kinds of Coal for the week is 734,172 tons, against 741,311 tons in corresponding week last year, a decrease of 10,139 tons, and the total tonnage for the Coal year is 22,785,218 tons, against 18,656,111 tons to same date last year, an increase of 4,129,107 tons.

The coal product of the Schuylkill region for the week ending September 17, was 162,233 tons, as against 159,254 tons for the week previous, and 175,349 tons for the corresponding week of last year. The total product for the week was 647,200 tons, against 639,394 tons for the same week of last year—an increase of 7806 tons. The output for the year, so far, is 19,372,880 tons, against 15,649,451 tons for the corresponding period of last year—an increase of 3,723,329 tons.

FOREIGN TRADE MOVEMENTS.

The following is a summary of the foreign trade movements for the past week:

IMPORTS

For the week ended September 23:

	1879.	1880	1881.
Total	$7,174,749	$7,503,779	$10,958,395
Prev. reported	224,663,055	358,773,398	310,855,189
Since Jan. 1	$232,057,804	$366,277,177	$321,813,584

Included in the imports of general merchandise for the week were articles valued as follows:

	Packages.	Value.
Anvils	179	$1,006
Brass goods	39	5,011
Bronzes	115	16,650
Chains and anchors	79	3,794
Clocks	55	7,345
Cutlery	148	48,993
Guns	239	39,052
Hardware	5	789
Iron, pig, tons	11,127	202,232
Iron, sheet, tons	637	73,021
Iron cotton ties	8,000	7,049
Iron ore, tons	7,762	24,255
Iron, other, tons	3,085	102,701
Railroad bars	2,120	6,964
Lead, pigs	415	1 737
Machinery	115	11,578
Metal goods	538	35,372
Needles	17	7,631
Nickel	28	6,650
Old metal	..	7,691
Platina	3	12,513
Platedware	4	149
Pins	9	973
Saddlery	18	3,323
Steel	43,581	243,474
Silverware	5	358
Silver ore	40	154
Tin, boxes	27,730	127,511
Tin, bbls	25	1,300
Tin, 6,531 slabs, 537,404 lbs	.....	109,109
Wire	330	3,282
Zinc	131,989	5,755

The following are the imports of leading articles, compared with previous dates:

	For the week.	38 weeks of 1881.	Same time 1880.
Cutlery, pkgs	148	5,175	6,601
Hardware, pkgs	5	731	958
Iron, R. R., bars	2,120	287,889	455,653
Lead, pigs	415	26,766	42,507
Steel, pkgs	43,581	804,595	502,374
Tin, boxes	27,730	1,199,634	1,251,762
Tin slabs, lbs	537,404	11,903,131	20,533,821

EXPORTS OF SPECIE.

For the week ended September 24:

Total	$130,266
Previously reported	8,158,436
Total since January 1, 1881	$8,288,702
Same time in 1880	5,522,242
Same time in 1879	12,558,292
Same time in 1878	10,566,210
Same time in 1877	22,840,810
Same time in 1876	40,587,168
Same time in 1875	65,243,974
Same time in 1874	42,624,304
Same time in 1873	42,062,193
Same time in 1872	57,974,805

IMPORTS

Of Hardware, Iron, Steel and Metals in the Port of New York, for the Week ending Sept 27, 1881:

Hardware.

Barbour Bros.
Mach'y, cs., 11
Boker Hermann & Co.
Cutlery, cs., 2
Gun material, cs., 7
Guns, cs., 9
Packages, 5
Campbell A. P.
Cases, 3
Degrauw, Aymar & Co.
Chain, lengths, 4
Dolge Alfred,
Cases, 2
Downing, Sheldon & Co.
Cases, 4
Mach'y, cs., 12
Drexel, Morgan & Co.
Cases, 13
Field Alfred & Co.
Cases, 23
Casks, 2
Folsom H. & D.
Arms, cse., 1
Cases, 4
Frasse P. A.
Cases, 2
Graef Cutlery Co.
Cases, 3
Hartley & Graham,
Cases, 2
Hensel, Bruckman & Co.
Mach'y, pkgs., 17
Lewis & Conger,
Cases, 2
Livingstone M.
Nails, bags, 300
McCoy & Sanders,
Packages, 7
Montgomery & Co.
Measuring chains, cs., 2
Moore's Sons J. P.
Arms, cs., 8
Russell Wm.
Mach'y, pkgs., 51
Schwab Bros.
Packages, 2
Scoville Mfg. Co.
Cases, 12
Schoverling, Daly & Gales,
Arms, cs., 14
Spencer Metal Mfg. Co.
Case, 1
Stevens Institute,
Case, 1
Stroud & Titus,
Packages, 5
Tomes Francis,
Case, 1
Ward Asline,
Cases, 9
Casks, 2
Whiting C. M.
Mach'y, pcs., 5
Wiebusch, Hilger & Co.
Cutlery, pkgs., 3
Witte John G. & Bro.
Needles, cs., 2
Guns, cs., 27
Woodford W. O.
Screws, cs., 3
Order,
Arms, box, 1

Iron.

Baring Bros & Co.
Bars, 12,162
Sheets, bdls., 183
Brown Bros. & Co.
Wire rods, 902
Wire rods, coils, 856
Bundles, 565
Bars, 3092
Crocker Bros.
Pig, tons, 491
Drexel, Morgan & Co.
Wire rods, bdls., 2898
Sheets, pkgs., 250
Ore, tons, 179
Hill Edward,
Oxide, cks., 12
Lang W. Bailey,
Coils, 274
Bars, 20
Lee James & Co.
Pig, tons, 200
Lundberg Gus.
Coils, 1253
Bars, 4612
Monjo Louis, Jr., & Co.
Old rails, tons, 35
Naylor, Benzon & Co.
Bars, 4897
Naylor & Co.
Spiegel, tons, 287¾
Perkins & Choate,
Spiegel, tons, 703
Phelps, Dodge & Co.
Pig iron, tons, 1500
Sanderson & Son.
Sheets, pkgs., 40
Tillotson & Co.
Wire, bdls., 207
Order,
Pig, tons, 2958
Casks, 8
Wire rods, bdls., 1319
Rails, 8721
Specular, kilos., 402,538
Sheets, bdls., 2750
Sheets, 320
Bars, 772
Spiegel, tons, 712
Tons, 348
Ore, tons, 804⅝
Cotton ties, 600
Old fish-plates, tons, 200
Scrap, tons, 541

Steel.

Brown Bros. & Co.
Blooms, 146
Brown Wm.
Barrels, 273
Cases, 2
Drexel, Morgan & Co.
Blooms, 2572
Bands, 741
Hannaruthers & Co.
Wire, cask, 1
Sanders Bros.
Blooms, 410
Third Nat. Bank,
Rails, 831
Woodford W. O.
Bars, 66
Bundles, 129
Order,
Bundles, 36
Casks, 2
Rods, bdls., 5324
Bands, pkgs., 340
Blooms, 1148
Rails, 665

Metals.

Baring Bros. & Co.
Tin plates, bxs., 3585
Dickerson, Van Dusen & Co.
Tin plates, bxs., 10,116
Hartley & Graham,
Empty cartridges, cs., 3
McGee James,
Tin plates, bxs., 3000
Monjo Louis, Jr., & Co.
Old copper, hhds., 2
Phelps, Dodge & Co.
Tin plates, bxs., 982
Powell W. F.
Copper, bbls., 6
Schoverling, Daly & Gales,
Gun caps, cs., 5
Semon Bache & Co.
Tin, sheets, cs., 10
Sacket & Co.
Zinc, pkge., 7
Steiner, Kahn & Co.
Zinc, pkgs., 3
Willett & Hamlin,
Sheath'g metal, cs., 155
Order,
Tin plates, 12,416
Tin, slabs, 2275
Barrels, 400
Cask, 1
Tubes, 316
Empty cartridges, bxs., 37
Old metal, bbls., 40
Old metal, cks., 2
Old metal, box, 1
Old brass, pcs., 8

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers are as follows:

Copper, heavy	₩ lb.	$0.14	@ $0.15
Copper Bottoms	"	.12	@ .13
Yellow Metal	"	.08½	@ .09
Brass, heavy	"	.11	@ .11½
Brass, light	"	08	@ .08½
Composition, heavy	"	.14	@ .15
Lead, heavy	"	....	@ .04½
Tea Lead	"	.03¼	@ .04
Zinc	"	.03½	@ .03¾
Pewter, No. 1	"	.13	@ .13½
Pewter, No 2	"	.08	@ .09
Wrought Iron	₩ ton	24 00	@ 25.00
Light do	"	12.00	@ ....
Stove Plate	"	12.50	@ 13.00
Machinery do	"	15.00	@ 15.50
Grate Bars	"	6.00	@ 7.00

The prices current (prices paid by local dealers) for Rags, &c., are as follows:

Canvas, Linen	₩ lb.	3½c.	@ 4 c.
White Cotton, New	"	3½c.	@ ....
" " No. 2	"	2½c.	@ ....
White, No. 1	"	4 c.	@ 4¼c.
" No. 2	"	2¼c.	@ 2⅜c.
Seconds	"	1 c.	@ 1¼c.
Soft Woolens	"	9½c.	@ 10¼c
Mixed Rags	"	2c.	@ 2½c.
Gunny Bagging	"	1¾c.	@ ....
Jute Butts	"	2c.	@ 2¼c.
Kentucky Bagging	"	4½c.	@ 4¾c.
Book Stock	"	2½c.	@ 2¾c.
Newspapers	"	1¾c	@ 1¾c.
Waste Paper and Scraps	"	½c.	@ ¾c.
Kentucky Bale Rope	"	4c.	@ ....

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Sept. 27, 1881.

Pig Iron.—The great national calamity has been the absorbing topic during the past week, and there has been comparatively little business done, and nothing upon which to base any special change in quotations. The action of the North British ironmasters in agreeing to reduce production 12½ % for six months is significant, however, and may have an important influence upon our market. It is evident that they are losing hopes of an American demand, and intend hereafter to aim at better prices, rather than continue at low rates in the hope of inducing a demand, which hitherto has been steadily withheld. It may be assumed, therefore, that unless something entirely unforeseen occurs, there is little to be feared for the present in the way of competition with foreign Iron. The same careful watching of the market will be required, however, or we may, perhaps, be found taking Iron at $25, already refused at a much lower rate. The present margin of about $2 per ton in favor of American Iron must not be narrowed; it will be safer and better for the trade at large if another dollar can be added to it. Freights are likely to be unfavorable to importers, shipments of Steel Rails, Blooms, &c., being heavy in this direction, while the outlook for return cargoes is not very satisfactory to shipowners; hence more inducements than usual have to be offered for the outward trip. Assuming that consumption will have to be met from domestic sources, some little improvement in prices is scarcely avoidable. Last week we intimated that there were signs of hesitancy in some quarters, and although the market since then has been quieter than usual, owing to causes already mentioned, the feeling is stronger, and furnacemen are unanimously of the opinion that they are warranted in demanding a further slight advance. Those who have already filled their order books make no change in quotations, but those who have been dragging along at somewhat below current rates, appear to be falling into line at full prices, so that $21.50, unless in very exceptional cases, is an inside rate for Gray Forge, and $25 for No. 1 Foundry. The best brands are held at $1 to $1.50, or even $2 more money, and a large amount of business is being done at rates varying according to brand. There is nothing like inconvenient scarcity, but the demand is sufficient to prevent accumulation, and when large buyers come into the market again, as they will have to sooner or later, it is almost certain it will be at higher prices than we quote to-day.

Foreign Iron.—We have not heard of any sales, although it is possible that a few odd lots of Middlesboro could be picked up at pretty low rates—say, $18 @ $19 for No. 4 and No. 3. At least two dollars advance would be required to clear cost on lots for present shipment, but so long as there are no buyers at the lower rates, it is not to be expected that anything will be done in the way of imports. Bessemer Pig is very quiet, and consumers show no disposition to pay over $25, although an advance of 50 cents to $1 per ton is generally asked. The leading companies are well supplied, and not likely to increase their engagements, unless under an apprehension that prices are going to be materially higher.

Blooms—There is no change in any particular; stocks are light and orders hard to place. Quotations are about as follows: Charcoal Blooms, $72.50; Run-out Anthracite, $60 @ $62.50; $52.50 for Scrap Blooms, and $47.50 for Northern Ore Blooms.

Muck Bars.—The demand is very active, and holders are asking $43 @ $45 for early deliveries. Sales have been made at $42, but it is likely that the next transaction will be at higher prices.

Bar Iron.—The demand shows no abatement, and orders are crowding on the market at gradually advancing prices. The base price at mill has been fixed at 2.6¢ for October, but manufacturers are already full for that month, and are not inclined to enter for delivery at a later date, unless at "price at time of delivery." The store price remains at 2.7¢, and it would be difficult to obtain concessions, the impression being that an advance to 2.8¢ is only a question of a few days' time. The weather continues unfavorable for a large production, and the demand is still far in excess of the supply. There is every reason to expect a much larger production during October than in any previous month this year, probably nearly double the July or August output. There is no expectation of over-supply, however, and the feeling is gaining ground that values are perfectly safe. Sales of foreign Iron (Merchant Bars) have been made, however, for shipment to New York and Boston, and unless there is some improvement in prices abroad, we are approaching very near to the danger line. Anything that brings foreign Iron into the market is dangerous, in fact, and it will doubtless be the aim of manufacturers to meet the demand from local sources as far as possible. The scarcity which has been felt for many weeks is probably almost at an end, and it is believed that current production from this time forward will be equal to current consumption.

Plate and Tank Iron.—Owing to the crowded condition of the mills, very little new business has been entered for some time past. Many of the leading concerns are still full, but there are others that are inclined to enter orders for delivery during November and later dates. Prices are irregular and unsettled, so that it is almost impossible to quote with entire accuracy. For small lots our last week's rates are obtainable, but for large orders, deliverable at convenient dates, slight concessions would probably be made. We continue last week's quotations, viz: Tank Iron, 3.25¢ @ 3.50¢; Refined, 3.75¢; Shell, 4¢; Flange, 5¢ @ 5.50¢; and Fire-box, 6¢ @ 6.50¢.

Sheet Iron.—The demand shows no falling off, but, on the contrary, seems to increase almost every day. There is scarcely any possibility of satisfying the entire wants of the trade, but manufacturers are doing their utmost to relieve the strain. Prices, of course, are firm, and, although difficult to quote definitely, are about as follows:

Common Sheet, No. 26 to 28	5¢
Common Sheet, No. 22 to 25	4¾¢
Common Sheet, No. 16 to 21	4½¢

Best Refined ¼¢ @ ½¢ advance on the above.

Best Bloom Sheets, No. 26 to 28	7¢
Best Bloom Sheets, No. 22 to 25	6¾¢
Best Bloom Sheets, No. 16 to 21	6½¢
Common Red Plates, 3-16 to 16	3.5¢
Blue Annealed, 3-16 to 16	3.7¢
Best Bloom Galvanized, discount	35 %
Second quality, discount	45 %

Structural Iron.—The demand continues heavy, and manufacturers find it almost impossible to make deliveries on time. The following prices have been fixed by the leading manufacturers: Angles, 2.8¢ @ 2.9¢; Beams, 3.7¢; Tees, 3.75¢; and Channels, 3.8¢ base, with extras for length and work.

Steel Rails.—The demand is very active, and a considerable amount of orders are being taken at prices varying from $58 to $60, at mill. Large lots have been entered at lower rates, but it is claimed that these were on options issued some weeks ago, and that no new business will be entered below the rates named. Higher prices are confidently predicted, but with such vastly increased facilities for production, it is scarcely probable that desirable orders would be lost for the sake of a dollar or two per ton in price. Foreign Rails can be laid down at about $60 @ $62 at Atlantic or Gulf ports, and if the American mills can find room for additional orders, there is little doubt that they could meet that or any other price that could be named. At present, however, they are fully employed, and as they are in no immediate need of orders, prices may remain as they are now quoted—say $58 @ $60, at mill.

Steel Blooms.—Inquiries are very numerous, and there is every reason to expect a heavy business in this line. Prices vary according to time required for delivery, and also according to terms of payment. Some insist upon prices duty paid, while others sell only f. o. b. or c. i. f. In a general way, £5. 15/ f. o. b. to £6. 7/6 c. i. f. are sterling prices, and $43.50 @ $44.50, duty paid. Sales have been closed at $44, and bids at £6. 2/6 and £6. 5/, c. i. f., made for large lots for shipment.

Iron Rails.—There is not much doing in new Rails, although inquiries are being made for quotations on two or three good-sized lots. Manufacturers are inclined to secure new business whenever it can be had on satisfactory terms, but offers have not been such as can be entertained, considering the price of old Rails. Small lots of 56's command $48, but for 500 tons and upward $47 @ $47.50 would be accepted, according to delivery. Light Rails command $50 @ $52, and are in fair demand. English Rails are offered at about $45 @ $45.50, delivered, but we have not heard of any transactions during the past ten days.

Railway Fastenings.—All kinds are firm and in active demand, and in many cases held at an advance. We continue last week's quotations, however, as follows: Spikes, 2 85¢; Fish Plates, 2.4¢ @ 2.5¢, and Bolts and Nuts, 3.25¢ @ 3.75¢.

Wrought Iron Pipe.—The demand is very large, and prices of all descriptions are firm at 40 % discount from list price for Boiler Tubes, and 57½ @ 60 % for Steam and Gas Pipe.

Crop Ends.—Supplies are larger than usual, and two or three lots are offered at $26.50 @ $27, but without finding buyers.

Old Car Wheels.—Very little business doing, but prices are firm at $28 @ $30, according to make.

Scrap Iron.—Choice lots are in good demand and saleable at $30 @ $31. Medium lots can be had at $28 @ $29, and Cast at about $20.

Old Rails.—There is no change whatever. Holders are stubbornly firm and buyers are equally indifferent. Offers of $28 can be had for shipment during the next three months, and for lots in store $27.75 @ $28.25 has been paid, and $28.50 for another lot free on cars. The demand is very trifling, however, and if one or two large lots were placed on the market for absolute sale, it is hard to say what price they would bring. Considering the few sales that have been made for so long a time, it is surprising how strictly prices have been held. Holders appear to be confident of still better prices, although $28 for Tees and $30 for Double Heads may be regarded as a fair quotation at this date.

Nails.—Stocks are universally light, and a steady business is being done at the advanced price—say, $3.40, less the usual trade discount.

Removals.—Edward Samuel & Co. have removed from the offices occupied by them for many years, at 332 Walnut street, to very superior premises in the new building just completed by the Commercial Union Fire Insurance Company of London, being No. 330 Walnut street, adjoining the old stand.

The Philadelphia Steel Forge have also removed their office from 315 Willings Alley to the Works at Frankford.

PHILADELPHIA, September 28, 1881.

Steel Blooms.—A sale of 11,000 tons Steel Blooms has just been closed.

PITTSBURGH.

(*By Telegraph.*)

PITTSBURGH, PA., Sept. 28, 1881.

At a full meeting of the Western Nail Manufacturers' Association, held in this city to-day, the card rate was, by a unanimous vote, advanced to $3.25; terms and discounts unchanged. Reports showed that the demand for Nails was unprecedented in the history of the trade.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., Sept. 27, 1881.

Notwithstanding the excitement attending the death of the President, as well as the protracted drought causing a partial failure of the crops, business keeps up well, with every indication that, so far as our manufacturers are concerned, it will continue so until the close of the year. Some of our Iron manufacturers are now unable to accept orders for delivery this side of January; we are cognizant of one large concern that has substantially given notice to that effect. But for the trouble in getting cars, the volume of business would be considerably larger, and a resumption of navigation, which has been suspended since early in the summer, is axiously looked for.

Pig Iron.—The inactivity noted for two or three weeks past continues; the demand is still of an unimportant character, confined almost wholly to supplying immediate wants, but there is no evidence of weakness. The consumption has been comparatively light for some time past, in consequence of the extreme hot weather, and just as soon as the temperature gets down so that the puddlers can work full time, there will be a largely increased quantity of the raw article consumed. True, some of the mills claim that they are supplied for the remainder of the year, but these are few in number, and we look for an increased business within the next few weeks. It is well to bear in mind that some of the furnaces are sold up to the close of the year and will be out of the market during that time. The favorable reports from the Eastern, as well as the English and Scotch markets, are having their influence here, strengthening producers, who are less apprehensive in regard to foreign irons, and some of them have hopes of being able to obtain better prices soon. The product of several of our largest furnaces including the "Isabella" and "Lucy," is consumed by their stockholders, who are owners of mills, and there is less iron being put on the market than many would suppose. Standard brands of Neutral Mill Iron may be fairly quoted at $22.50 @ $23, 4 mos., from native ore, and $23.50 @ $24 for that made from Lake ores; the supply of the latter, inclined to Red-short, is light and there is considerable inquiry for it. White and Mottled Irons from $20 @ $22. Foundry Irons remain quiet and unchanged, $23 @ $23.50, 4 mos., for No. 2, and $24 @ $25 for No. 1.

Bessemer Iron.—There are considerable negotiations in progress, but for the past week or two only a few unimportant sales have been reported. We continue to quote best brands of American at $27 @ $27.50, 4 mos. A couple of purchases of English Bessemer, said to be a favorite brand, were reported a few week ago, one at $28 and the other at $28.50, cash, delivered in Pittsburgh.

Muck Bar.—There is considerable inquiry and but little offering; good mixtures are still quoted at $41, cash, to $42, 4 mos., just about $1 per ton above what consumers are disposed to pay, claiming that the prices demanded are too high, as compared with those ruling for the products.

Manufactured Iron.—There has been no marked change in the situation during the week. There appears to be no abatement in the demand, and the turning away of orders is of almost daily occurrence. We repeat former quotations: Merchant Bars, 2.50¢ rates; Sheet, 3.25¢ @ 3.30¢ for No. 24; Tank, 3.40¢ @ 3.50¢. One of our mills received an inquiry the other day for a lot of Skelp Iron, and not wanting the order, a price was quoted that it was supposed would put a quietus on it, but it was promptly accepted, to the great surprise of the mill aforesaid.

Nails.—The activity in the market, noted for several weeks past, continues, and it is now almost impossible to place an order for present delivery at full card rates; indeed, we doubt whether any assorted order for a thousand kegs could be filled for prompt delivery by any mill in Pittsburgh. There is considerable inquiry from the East, and sales have been made recently for shipment to New York and other seaboard points, which is something unusual. As stated in our last report, stock in first hands is very much reduced, which may be attributed to the fact that all other descriptions of finished Iron has for some time past been bringing more remunerative prices than Nails, and an advance in the price of the latter may be looked for at any time. The card rate remains unchanged at $3, with the usual discounts.

Wrought Iron Pipe.—There appears to be no let-up in the demand, and the mills have more than they can do. One of the largest concerns in the country would prefer not to get a single order for some time to come, being anxious to complete existing contracts instead of increasing them. It is said that some of the Pipe mills are uncomfortably situated in respect to Pipe Iron, their supply being small, and it is almost impossible to replenish. Prices for Pipe remain unchanged at 57½ @ 60 %; Boiler Tubes, 40 % off; Oil-well Casing, 82½¢ per foot, net; ditto Tubing, 24¢. The fact that the oil business is looking brighter will no doubt increase the demand for all kinds of oil-well supplies.

Rails, &c.—Steel Rails are still quoted at $62, cash, at mill, for delivery this year. Some orders have been placed for 1882 at $60. Spikes unchanged at 3¢; Splice Bars, 2.50¢ @ 2.60¢. Track Bolts, 3.50¢ @ 3.75¢.

Steel.—This important interest presents nothing really new; business continues active, mills have about all they can do, and prices remain unchanged. Best brands of Refined Cast Steel, 11¢; do. Crucible Machinery, 6½¢ @ 7¢; Bessemer and Open-hearth do., 5¢; do. Spring do., 4¢ @ 4½¢; do. Plow, 4¢ @ 4¼¢.

Scrap.—Wrought is in better demand and firmer, but we do not alter our quotations: $30 @ $31 per net ton for Selected Railroad, and $28 @ $29 for Ordinary. Crop ends remain unchanged at $29 @ $30 per gross ton—the last sale reported was at $29. Old Car Wheels continue dull, but prices remain unchanged at $28 @ $30 gross; Cast Borings and Wrought Turnings, very dull; former quoted nominally at $15 @ $16 per ton gross, and the latter at $19 @ $20, net.

Window Glass.—Some of the largest buyers, it is understood, are disposed to hold off in anticipation that there may be a break in prices, but in this it is believed they wil

be disappointed, as there is likely to be an active business this fall, and, besides, the supply in first hands is small. The situation is materially changed from what it was a year ago. We continue to quote discounts at 60 and 10 and 5 % on single and 70 % on double strength for carload lots, 60 days, with 2 % off for cash.

Coke.—Business is restricted somewhat for two reasons; one is a scarcity of water, which is a necessary article in the manufacture, and, another, the scarcity of cars for shipment. We continue to quote at $1.60 per ton, free on cars at ovens, in a regular way; small foundry orders, $1.70 @ $1.75.

CHICAGO.

Office of *The Iron Age*,
36 and 38 Clark Street, cor. Lake Street,
CHICAGO, Sept. 24, 1881.

Pig Iron.—The trade in all grades of Pig Iron during the week has been satisfactory, the market is very firm, buyers are plentiful and deliveries on former contracts fair, with an upward tendency in quotations for future deliveries. We quote for Lake Superior Charcoal, Nos. 1 and 2, $33; No. 3, $32; Nos. 4, 5 and 6, $34 @ $35; Crane Iron X, $28; XX, $26; Thomas, $25.50 @ $28.50; Scotch Imported, $27.50 @ $29.50; American Scotch, $25 @ $28, and Silvery Soft, $23 @ $25.

Manufactured Iron.—The demand for Manufactured Iron has been brisk and the market very firm at the following quotations: Bar, in store, 2.80¢; at mill, 2.70¢; Angle, 3.50¢; T, 3.70¢; Hoop at 3.30¢ rates; Sheet, Plate and Tank, 10 to 14 gauge, at 3.80¢ @ 4¢, nominally. The supply of the more generally used classes of Iron still continues inadequate to the demand.

Nails.—The market here during the past week has been very active and prices firm. The nominal quotation is $3.15 per keg in less than carload lots for 10d to 60d—the tendency of prices is upward.

Steel.—No change worthy of note since our last writing, prices are firm and demand good. We quote: Tool, 11½¢; Machinery, O. H., 5½¢; Crucible Machinery, 7¢; Hammer, 2 inches and under, 8¢; over 2 inches, 9¢; Cast Spring, 6½¢; and O. H. Spring, Tire and Sleigh Shoe, 5¢. The quotations on this latter class of Steel would be shaded a trifle on large lots. Sheet, first, second and third quality, 12¢, 10½¢ and 8½¢, respectively; Crucible Plow, 6¢ @ 6½¢; Eagle Plow, 5¼¢; Iron Center Plow, 10¼¢; and soft Steel Center Plow, 10¾¢.

Scrap Iron—Continues to be in fair demand at the following quotations: No. 1 Forge Scrap, $30; No. 1 Wrought, $24; Heavy Cast, $20, and Stove Plate, $13.

CHATTANOOGA.

Office of *The Iron Age*. Market and 8th Sts.,
CHATTANOOGA, Oct. 1, 1881.

Business during the week has been fair, in spite of the unusual excitement attending the death and funeral of the President. All manufactured articles are stiff at quoted rates, and some tend strongly to advance. The cotton crops, as this report has steadily maintained would be the case, is showing for much more than the croakers put it at. The total will not fall much short of 6,000,000 bales, unless the most cautious and best posted cotton men in the South are much mistaken. This crop will certainly be secured in better shape than any one picked for several years, and will bring more money than the great yield of last year, thus enabling planters to mostly pay their debts and get themselves in good form to begin next summer's work. The sale of agricultural tools and machinery will not be shortened appreciably this winter in the cotton States. The only severe loss on crops in this section has been in the border valley along the James, Potomac and Tennessee, where corn and wheat are the principal products.

Pig Iron.—There is nothing of moment in the market. Prices continue steady and stocks are well worked down. We quote: No. 1 Foundry, $22 @ $23; No. 2 Foundry, $20 @ $21; Gray Forge, $18 @ $19; White and Mottled, $16 @ $18; Car-wheel Metal, $38 @ $40.

Ores.—We quote: 50 % Brown Hematite, per ton, $2 @ $2.75; Red Fossil, $2 @ $2.25.

Miscellaneous Articles.—Old Rails are in fair demand at $26 @ $28; Wrought Scrap, $20 @ $25; Cast Scrap, $10 @ $15; Old Wheels, $28 @ $30.

Nails.—Our dealers have advanced rates to $3.25 from $3.10 for job lots. The demand is very short, and the mills have all they can do for several weeks ahead.

Manufactured Iron.—Bar continues in good request at $2.50 rates. We quote: Spikes, $3.15; Track Bolts, $4; Trestle Bolts, $4.50; Fish Plate, $2.75.

Coal.—Lump, $4.25 per ton delivered; Run of mine, $2 at mills. Miners still find great difficulty in securing cars in sufficient number to get their products to market.

Coke.—Furnace Coke, $3 per ton at furnace; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.—Steel Bars, $62 @ $64 at mill; Iron, $50 @ $52; Small, $57 @ $60.

BOSTON.

SEPTEMBER 24.—The demand during the past week has been of fair proportions, though the amount of business done has not been so large as during the closing weeks of August. Still there is enough doing to show that the consumption has not decreased, and also the fact that trade can be easily conducted upon the current quotations. The tone of the market is very firm, and there is confidence manifested, taking into consideration that the supply is but barely able to meet the demand, that the present prices can be very easily maintained. Some choice brands are scarce, but in very few cases have prices been advanced as yet. The talked-of foreign importations seem to be more remote than ever, in view of the fact that foreign Pig has made another advance over that of last week. But, nevertheless, it is probable that the danger of foreign importations will be sufficient to restrain the furnacemen from placing the price of American Pig Iron much higher than at present, though there is a decided upward tendency noted at the end of the week, and prices may be advanced sufficiently to keep the market just under importation prices. Toward the end of the week the market began to look a little more interesting than it had previously been. *American Pig.*—Prices are firm, though nominally unchanged. Prices at shipping ports are: $24.50 @ $25.50 for No. 1 X; $22 @ $23 for No. 2 X, and $20.50 @ $21.50 for Gray Forge. Small spot lots command $2 @ $3 per ton above these quotations. *Foreign Pig.*—There has been an advance of from 3/ to 4/ over last week's prices. We quote Eglinton at $22 @ $22.50; Langloan, $25 @ $26; Gartsherrie, $24 @ $25; Glengarnock, $23.50 @ $24.50; Carnbroe, $22 @ $22.50. *Old Rails.*—The market has been quiet and the prices are about the same. We quote American at $30 and Foreign at $28. *Manufactured Iron.*—There is no change nominally to note in the prices of Manufactured Iron, though the prices asked are easier to get than last week. The stocks of Iron are light in all classes, and, to show their condition, we instance the case of the rack of a Bar Iron dealer which, at its full capacity, is calculated to hold 1000 tons, and at present contains but about 250 tons. Similar reports come from other dealers. Orders have to be refused on this account, as they cannot be filled, and there is no prospect of filling them for some time to come. The mills are filled up with orders for months ahead, and some of them have advanced their prices for the purpose of checking demands upon them, and threaten that if this advance is not sufficient, prices will be advanced still further. The demand, which is a legitimate one, is greater than it has been for years, the stocks are lower than for years, and it is proved beyond doubt that the capacity of the mills is not equal to the strain upon them. This is also the case in other parts of the country, and the question is, Where is the Iron which is needed to come from? It seems certain that foreign Iron would be the only resource, but foreign Pig has advanced, and latest cable reports show great firmness in Manufactured Iron and advances in some classes. It looks as if prices would rise here also. *Bar Iron.*—We quote Refined at $2.60 for large lots, and in some fancies sales were made at $2.75; Horse Shoes, $4.25 @ $4.33; Swedish and Norway at $3.75 @ $4 for Bars, and $4.75 @ $5 for Shapes. *Plate Iron.*—Trade has been very good and prices are firm. We quote Tank at $3.35; Refined at $3.45; Shell at $4.10; Flange at $5.10, and Tubes unchanged at 40 % from list. *Sheet Iron.*—Foreign importations of Sheet Iron are beginning. The demand is good. We quote: Sheet Iron, 4¢ @ 4½¢; ditto Refined 5¢ @ 5½¢; Galvanized, 8¢ @ 10¢; Russia, 11¢ @ 12¢. *Steel.*—The demand is very good for seasonable goods. We quote: Best English Cast, 14¢ @ 15¢; American do., 12¢ @ 12½¢; Bessemer Machinery, 5¢ @ 6¢; Wedge and German, 7¢; English Spring and Calking, 7¼¢ @ 7½¢; American ditto, 5½¢ @ 6¢; Tire, 4¢ @ 4¼¢; Sleigh Shoe, 3½¢. *Nails.*—The stocks are light and the demand is good. Prices are firm. We quote $3.40 @ $3.50 for 10d. per cask. *Copper.*—The prices remain firm at 18½¢ @ 18¼¢, though the demand has fallen off. We quote: Ingot Copper at 18½¢ @ 18¼¢; Sheathing, 24¢; Braziers, 26¢ @ 28¢; Bolt, 26¢; Copper Bottoms, 27¢ @ 28¢; Yellow Metal, 17¢; Yellow Metal Bolt, 20¢. *Lead.*—There is a short supply, and trade has been good at an advance. We quote: 5¼¢ in car lots and 5¾¢ in small orders; Bar, 7¢; Pipe, 7¢; Sheet, 7½¢; Tin-lined Pipe, 15¢; Tin Pipe, 35¢, less 10 %. *Zinc.*—The demand is good and no carloads can be had under November delivery. We quote $5.50 @ $5.75 by the carload. Small lots $5.75 @ $6. Sheet Zinc is in short supply at 7½¢ @ 7½¢. *Tin.*—English has advanced. The demand is good and the the market strong. We quote 21¾¢ @ 22¼¢. Large lots sell at 21½¢; English, 23¢. *Tin Plates.*—The jobbing demand has been very good. We quote: Charcoal Bright at $6.25 @ $6.50; Ternes at $5.75 @ $7.25; Cokes, $5.35 @ $5.55; ditto Ternes, $5.25 @ $5.50.—*Commercial Bulletin.*

LOUISVILLE.

Messrs. GEO. H. HULL & Co., Commission Merchants, report to us as follows, under date of Sept. 23, 1881: There is a good demand for Hot-blast Irons of all grades at full figures, but most of the furnaces are so fully sold ahead that they will not book further orders, and sales, in consequence, are limited. There is a good supply of Car-wheel Irons, but little or no demand. Prices on all Irons are firm, with a tendency to higher prices:

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$27.00 @ 28.00
No. 2 " "	25.00 @ 27.00
No. 1 Southern, Charcoal	24.00 @ 25.00
No. 2 " "	22.00 @ 23.00
No. 1 Hanging Rock, Stonecoal and Coke	23.50 @ 24.00
No. 2 Hanging Rock, Stonecoal and Coke	22.50 @ 23.00
No. 1 Southern, Stonecoal and Coke	23.50 @ 24.00
No. 2 " "	22.00 @ 22.50
"American Scotch"	21.00 @ 23.00
Silver Gray	20.00 @ 21.00
Scotch	24.00 @ 26.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neutral	21.00 @ 22.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	20.50 @ 21.00
No. 2 Stonecoal and Coke, Cold-short and Neutral	19.50 @ 20.00
No. 1 Missouri and Indiana Red-short	25.00 @ 27.00
White and Mottled, Cold-short and Neutral	18.00 @ 19.00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast	35.00 @ 41.00
Alabama and Georgia, Cold-blast	35.00 @ 38.00
Kentucky Cold-blast	35.00 @ 40.00
Hanging Rock, W. B	29.00 @ 33.00

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 113 and 115 Main street, report to us as follows, under date of Sept. 24: The record for this week must be essentially the same as that of last, viz.: A strong demand for all kinds of Iron for immediate delivery, and an impossibility of supplying that demand. Strictly Bar sizes are selling above the card rate. Sheet continues to advance, with no visible supply to check it. Nails have notably stiffened as old stocks have disappeared, and buyers realize that full card rate—$3 at the mill—must be paid to replace same.

ST. LOUIS.

Messrs. HOFFER, PLUMB & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, write us, under date of September 24: The supply of Foundry Iron is very light and the demand strong. As a result furnaces are asking and getting somewhat higher prices. For cash we quote:

HOT BLAST CHARCOAL.

Missouri	$27.00 @ 28.00
Southern	26.50 @ 27.50
Ohio	28.50 @ 30.00

COKE AND COAL.

Missouri	27.00 @ 28.00
Southern	25.00 @ 26.00
Ohio	26.00 @ 27.00

MILL IRONS.

Cold-short	22.00 @ 23.00
Red-short	24.50 @ 25.00

CAR WHEEL AND MALLEABLE IRONS.

Missouri	28.00 @ 30.00
Southern	35.00 @ 38.00
Ohio	32.00 @ 42.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of Sept. 27: Market quiet, but considerably interfered with by the interruption of mails and suspension of business occasioned by the death of the late President. Quotations unchanged:

Scotch Pig Iron	23.00 @ 27.00
No. 1 Anthracite Pig Iron	24.00 @ 26.00
No. 2 "	22.00 @ 24.00
No. 3 "	21.00 @ 22.50
No. 1 Virginia Coke Pig Iron	23.00 @ 24.00
No. 2 "	22.00 @ 23.00
No. 3 "	20.00 @ 22.00
Virginia Charcoal C. B.	34.00 @ 36.00
Old Rails	27.00 @ 29.00
Wrought Scrap, No. 1	22.50 @ 24.00
Cast, Machinery Scrap	20.00 @ 21.00
Refined Bar Iron	@ 2 6-10
Horse Shoes (Tredegar)	@ 4.00
Mule "	@ 5.00

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

LONDON, ENG., Sept. 12, 1881.

THE WEEK

has been characterized by a greater degree of animation in the Iron market than has been apparent for a long time past. Several causes have combined in the production of this effect. Primarily, the very favorable statement of the Cleveland Ironmasters' Association (which I gave last week), showing an increase in the stocks of 507 tons only, instead of as many thousand tons as had been anticipated, gave rise to the impression that the home consumption must be on a larger scale than had been imagined, and so imparted a good deal of firmness to the North of England market. It is true that many persons have declared the statistics to be erroneous, but the figures were prepared in the usual manner and by the same officials, in addition to which they were carefully checked over, so that there is no valid reason whatever for doubting their accuracy. Such being the case, the inference is that the home demand improved very considerably during August. Then, again, the weather was somewhat finer last week, and it was made known in different parts of the country that the results of the harvest would probably be better than had been supposed; indeed, there can be little doubt that over a wide area of England the crops have been ingathered in a moderate condition—equal, perhaps, to something like 15 to 20 per cent. below an average harvest, taking the country as a whole. The prevalence of this feeling tended to impart more confidence to buyers, as being likely to render the country traders more solvent and more inclined to repleuish their stocks, which are known to be very low in all directions. Another contributory cause was the excellent nature of the Board of Trade returns, the details of which (given elsewhere in this communication) showed capital results as regards the export transactions of August. The totals in respect of iron, hardware, &c., being unusually good, the returns as a whole were hailed with satisfaction as being indicative of "better things to come." These were all stimulating reasons for the adoption of more sanguine views, and they undoubtedly tended to greatly strengthen the markets all round, but neither singly nor in the aggregate were they productive of such an immediate spurt as that which followed the announcement of a desire on the part of the Scotch ironmasters to reduce the production of pig iron. It will be remembered that some time ago the Cleveland iron smelters made a similar proposition to the Scotchmen, which idea the latter gentlemen declined to entertain. Now, the Scotch ironmasters bring forward the suggestion, adopted at a meeting held last week, that each of the two districts should blow out 20 furnaces. This would be equivalent to about one-fifth, and a fraction over, of the Scotch furnaces, and about one-sixth of those now at work in Cleveland. The Scotch gentlemen are willing to take this course, provided their North of England brethren are willing to do likewise. Under the circumstances, it is by no means certain what the outcome of the negotiations may be, but, in either event, you will doubtless have had the result by cable long before this reaches you. It is assumed that the Cleveland smelters will not be very willing to give their assent, bearing in mind the slap in the face they recently received from the same quarter. They are certainly in a far better position than the Scotch furnace owners, as I have pointed out on many former occasions, and it will not surprise me if they leave the latter gentlemen to find their own level—to reap the whirlwind they have sown. It shows plainly, however, how immediately and effectively such a step would relieve the market, for as soon as the decision of the ironmasters crept out warrants went up 2/ at Glasgow, and 1/ or so at Middlesboro'. In all probability the matter will be decided during the present week. Whatever may be done now, it is perfectly plain and certain that no long interval can possibly elapse prior to the stoppage of some of the Scotch furnaces being rendered compulsory. The sooner the thing is done voluntarily, therefore, the better for all concerned. As a matter of fact, the Scotch owners would clear a good deal of money by at once damping down, or blowing out, half their furnaces, even though it cost them £2000 a furnace to carry the process through all its stages. The stock on hand would be appreciated in value several shillings per ton, immediate consumption would be greatly stimulated, the markets all over the world would feel the influence of the spurt, and values would rise in all directions, especially in your great market, which appears to be bound down to hard and fast limits under the fear that importations might be resumed on an enormous scale were your quotations to be levelled up in accordance with the wants of your consumers. All these are considerations of the first importance, but our recent experience has been of such a nature that we cannot possibly feel sure that they will have due weight with the ironmasters of Scotland. In the meantime, pending near developments, it is gratifying to be enabled to report the undoubted existence of a very large volume of business in the English iron trade. In all probability the general turnover is equal to that of any former period; hence there is some reason for assuming that a slight *bona fide* rise in prices might almost immediately burst into a considerable sort of "boom." I am not to be understood to say that such will be the case. All I say is that all the materials for a big fire are lying around, as it were, and a very little match might set the whole alight. Further than that I do not go, especially as I notice that you are in very much the same condition, judging from the trade reports contained in the latest copy of *The Iron Age* to hand here.

Hematites are steady, some little weakness, caused by sales from second holders, having had no lasting effect. Manufactured iron is selling very well, as a whole, and it can scarcely be doubted that the mills and forges have their order books sufficiently well filled to insure a steady autumnal production. The best call is for hoops, sheets, galvanized iron, tube strips, plates, angles and odd sizes of rolled iron. Some of the hoop manufacturers are sold forward for four months, and are said to have offers from American buyers for a large percentage of their total product over the first half of 1882. The plate mills are excessively busy on ship, boiler and other plates. The tube manufacturers reduced their discounts 5 to 7½ per cent. on September 10, and are reported to be extremely busy. For fencing wire the demand rules strong, and even for common bars there is a decidedly improved inquiry. There are many pressing commissions from the United States for iron rails, but the early deliveries specified prevent business. A few lots of 56-pound "Sandbergs" have been sold at £5. 7/6 for October and November deliveries. The same state of things exists as to steel rails, owing to the briskness of every rail mill in Europe. A few orders have been placed at £6. 5/ per ton for medium sections, but in this case early deliveries are nearly out of the question. The same remark applies to Bessemer blooms, of which any quantity almost might be sold for this and next month were they available. For old D. H. rails there is a strong demand from your side, and a few small lots have moved off at £4. 6/ @ £4. 8/, but holdings, as a rule, are light and in the hands of railway companies, who ask £4. 15/ per ton. There is very little doing in wrought scrap on shipping account, but old leaf spring steel still sells with freedom.

SCOTCH PIG IRON

is firmer in price, but somewhat unsteady and unsettled at the moment by reason of the uncertainty which exists as to the fate of the restriction proposal. Warrants are nearly 2/ better than ten days ago, and are pretty certain to rise should any appreciable reduction of the output be effected. At present there are 119 furnaces blowing (including 9 on hematites), as against 39 this date last year, when warrants were 53/3 to 53/1 per ton. In Connal's stores there are now 582,252 tons (an addition of 1702 tons on the week), as compared with 469,132 tons a year ago. The shipments last week were rather better, but still below those of the corresponding week of 1880. To date this year they have decreased to the extent of 114,120 tons, on a total of 383,315 tons. Importations from Cleveland, on the other hand, have increased 38,868 tons this year, on a total of 203,072 tons. Ballast pig iron is still held at 42/6 per ton alongside ship, and freights (steam) for pig iron from Glasgow are: New York, 10/; Baltimore, 18/; Boston, 18/6; New Orleans, 17/, and Philadelphia, 17/6. According to John E. Swan & Bros. (Limited) the position of the furnaces, &c., is as under:

LANARKSHIRE BRANDS, FREE ALONGSIDE SHIP AT GLASGOW.

Brands.	Prices. No. 1.	No. 3.	No. 4.
Gartsherrie	55/	48/6	....
Coltness	57/	49/	....
Langloan	57/	49/	....
Shotts, Bessemer, Ordinary	56/	49/	....
Calder	55/	49/	....
Summerlee	55/	47/	51/
Chapelhall	58/	....	....
Carnbroe	51/	46/6	51/
Clyde	49/6	46/	46/
Quarter-Clyde	48/	45/	46/
Govan	48/	45/6	....
Wishaw	....	....	....
Monkland	48/	45/6	....
Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b., f. o. b. Glasgow			47/9

AYRSHIRE BRANDS, FREE ALONGSIDE SHIP AT ARDROSSAN.

Glengarnock	51/	46/6	51/
Ardeer			
Eglinton (Branded Eglinton)	48/	44/6	46/
Lugar (Branded Eglinton)			
Muirkirk (Branded Eglinton)			
Portland (Branded Eglinton)			
Dalmellington	48/	45/	46/

EAST COAST BRANDS, FREE ALONGSIDE SHIP IN THE FORTH.

Carron, Selected	51/	....	....
Carron, Ordinary	49/	47/6	....
Almond, Selected	52/	....	....
Almond, Store	49/	46/	....
Kinneil	47/	45/	....

CLEVELAND IRON

has grown somewhat firmer since last week, owing to the favorable statistics and the improvement in Scotland. The statistics are so good in point of stocks that their accuracy is openly disputed, but I think there is no valid reason for doubting their strict correctness. Shipments from Middlesboro' and the Hartlepool, &c., are on a good scale, and the local demand is steady, albeit not more than an average. Current prices for G. M. B., net cash, at makers' wharves in the Tees are:

No. 1 Foundry	42/	Mottled	35/9
2 "	40/	White	36/
3 "	38/	Refined Metal	52/6
4 "	37/6	Kentledge	38/6
4 Forge	37/3		

The steel works are busy. The Erimus establishment, once devoted to Danks, is now on the point of going ahead. The Eston Works of Bolckow, Vaughan & Co., are using a good quantity of Cleveland iron for dephosphorizing, but the works were not opened to the British Association members who visited Cleveland last week, "owing," it is said, "to the extent and complications of the works." Really, the processes are kept strictly secret.

THE BOARD OF TRADE RETURNS

for the month of August were issued on the 8th inst., and give many particulars of a highly favorable and hopeful nature. The imports were of the value of £32,691,098, as against £31,019,098 in August, 1880, the falling off in wheat and flour being more than set off by the increased imports of tea, coffee and raw materials for manufactures. The exports last month were of the aggregate value of £21,180,695, as compared with £19,114,315 in August, 1880, and £17,336,308 in August, 1879. The quantity of iron and steel of all kinds exported was 361,271 tons, worth £2,482,518, as compared with 294,586 tons and £2,207,169 in the same month of 1880. A good deal of the increase was in respect of pig iron, bars, angles and sheets, railroad iron and unwrought steel. The average price of the pig iron sent to the United States during the month was £3. 13/11, so that there must have been a large proportion of spiegel and hematites. The average price of the iron rails shipped foreignwise was £5. 16/11¼ per ton, and of the steel rails, £6. 12/8¼. The average price of the unwrought steel sent to your ports was £7. 14/6¼, showing a large proportion of Bessemer blooms.

To the United States our leading exports were:

Articles.	Month of August, 1881.	Month of August, 1880.	Month of July, 1881.
Alkali, cwts.	262,103	273,723	251,736
Hardware and cutlery, £.	44,968	44,624	50,518
Iron—Pig, tons	48,246	27,198	40,347
Bar, angle, rod, &c., tons	943	1,209	1,150
Railroad, all, tons	29,634	16,311	27,182
Hoops, sheets, plates, &c., tons	7,058	1,057	4,784
Tin plates, tons	16,641	16,300	16,618
Cast or wrought, tons	516	5,788	482
Old wrought, tons	8,872	4,181	5,946
Steel, unwrought, tons	11,719	903	13,750
Lead, all, tons	50	....	28
Steam engines, £	10,042	179	25,707
Other machinery, &c, £	18,715	31,994	13,863
Tin, unwrought, cwts	955	927	933
Special Return—Iron rails, tons	5,763	4,419	6,728
Steel rails, tons	23,820	11,853	20,096

The chief items relating to iron, hardware, &c., are shown below:

Articles.	Quantities. 1880.	1881.	Values. 1880.	1881.
Firearms, small, No.	17,309	15,268	£23,014	£25,485
Brass, manufactures of, not being ordnance, cwts	7,355	7,549	29,983	33,972
CARRIAGES.				
Railw'y carriages for passengers, No	86	24	12,819	4,267
Railway trucks, wagons, &c., No	147	188	5,911	13,583
Coal, &c., tons	1,643,951	1,054,908	735,479	801,724
Copper, unwt., cwts	19,495	31,725	64,960	100,829
Copper, wrt., cwts	33,595	37,241	121,559	100,622
Mixed or yellow metal Sheathing, cwts	34,123	31,837	90,616	86,460
Hdw. and cutlery	....	....	181,700	321,052
IRON AND STEEL.				
Pig, tons	125,684	141,503	395,750	435,104
Bar angle, &c., tons	23,741	24,606	169,609	166,619
Railroad, tons	60,280	78,478	455,875	532,675
Wire (except telegr. wire), tons	4,013	6,726	59,087	78,119
Hoops, sheets, and boiler and armor plates, tons	19,010	30,135	226,089	309,248
Tin plates, tons	21,848	21,700	408,864	363,646
Cast or wro't, tons	24,766	23,587	299,152	328,597
Old for re-manufacture, tons	10,772	10,018	80,499	40,528
Steel, unwr'ght, tons	2,597	14,345	79,784	154,648
Man'factures of steel and iron, tons	675	1,189	62,363	73,984
Lead, tons	2,702	4,981	46,377	75,470
MACHINERY AND MILL WORK.				
Steam engines	....	....	186,921	313,815
Other descriptions	....	....	555,907	544,319
Plate and pltd. and gilt wares	....	....	16,827	21,957
Tel. wire & apparatus connectd there with	....	....	32,149	487,642
Tin (unwrt.), cwts	6,266	8,241	28,845	39,203

Messrs. Schmitz & Co., of Middlesboro', have compiled the subjoined useful summary from the returns:

EXPORTS FOR EIGHT MONTHS ENDING AUGUST 31, 1881, COMPARED WITH THE SAME PERIOD OF LAST YEAR.

	Total Exp'ts. 1880.	Total Exp'ts 1881.	Inc. upon 1880.	Dec. upon 1880.
	Tons.	Tons.	Tons.	Tons.
U. S. America	1,117,550	766,165	.....	351,385
B. N. America	158,186	148,519	.....	9,667
India	204,599	150,955	.....	50,644
Australia	137,046	159,584	22,538	.....
B. South Africa	15,410	11,344	.....	4,066
Russia	125,702	102,490	.....	23,212
Germany	160,934	170,069	9,135	.....
Holland	132,696	150,171	17,475	.....
Belgium	93,054	57,567	.....	35,487
France	76,985	128,425	45,430	.....
Italy	28,087	42,619	14,532	.....
Turkey	4,627	10,919	6,292	.....
Sweden & Nor	4,926	4,743	517	.....
Denmark	180	99	.....	81
Spain & Canaries	17,040	19,003	1,963	.....
Egypt	3,926	4,981	1,055	.....
Brazil	26,339	44,670	18,331	.....
Peru	1,102	1,274	172	.....
Chili	2,212	634	.....	1,578
Destinations not specified	397,094	477,089	79,995	.....
	2,705,485	2,445,900	216,535	476,120
	Net decrease		.....	259,585

WEST COAST HEMATITES.

Bessemer and ordinary hematite pigs of West Coast make are steady and firm on the whole, although a few odd sales by weak second holders have here and there caused prices to seem irregular. The general and shipping demand, however, continues very large, and is so considerable in the aggregate that it is probable the district is doing a larger trade than at any former period. The prices of the day are as follows:

	No. 1.	No. 2.	No. 3.
Cleator	63/6	62/6	61/6
Lonsdale	58/	57/	56/
Workington	58/	57/	56/
West Cumberland	58/	57/	56/
Lowther	58/	57/	56/
Moss Bay	58/	57/	56/
Distington	58/	57/	56/
Harrington	58/6	57/6	56/6
Solway	58/	57/	56/
Maryport	....	....	56/6

There are now 60 furnaces at work out of a total of 81 built, bringing up the make to about 30,000 tons weekly. Last week's shipments were 15,219 tons pig iron, rails and blooms 6343 tons. Two new steel works are projected in the vicinity of Workington and Moss Bay.

TRADING PROFITS

within the past seven or eight months have been on an improved scale, judging from the half-yearly dividends now being made known by some of the iron, &c., companies. William Jessop & Son (Limited), Sheffield, pay at the rate of 5 per cent. per annum. The Shotts Iron Company have cleared £18,000, which they do not divide. The Staveley Coal and Iron Company, Derbyshire, pay £2 per share on the A and C shares, and 6/8 per share on the B and D shares, or equal to 10 per cent. The Sheepbridge Iron and Coal Company, Derbyshire, pay 2½ per cent. The Consett Iron Company (paid up capital £560,000) have cleared £195,070 during the year (or about 40 per cent. on the capital), pay 27 per cent. dividend and carry forward £19,000. The Pearson and Knowles Coal and Iron Company, Lancashire, have cleared £49,700, yielding a dividend of 6 per cent., and leaving £10,000 to be added to the reserve, which is thereby made £70,000, besides carrying forward over £4000.

THE "FAIR TRADE" MOVEMENT,

alias reciprocity, alias protection, or any other alias which may fit the agitation, continues to grow apace, and is attaining dimensions of great magnitude. Every leading newspaper has columns of correspondence daily upon the apparently all-absorbing theme, and no public man ventures to speak without declaring his views on this head. The movement undoubtedly gains in strength and in numbers, although at the same time it cannot be said to have secured the active support of leading men. The most strenuous of its supporters are the artisan classes and some of the trades unions, who have thrown themselves into the breach with much ardor and animation. Nearly half-a-dozen district associations, leagues and the like, have been formed to work up the idea, and all these are hammering away most devotedly. One of the principal of these is the "National Fair Trade League," which has its headquarters in London, with Mr. Sampson Lloyd, late president of the Associated Chambers of Commerce, as its chairman. This body advocates the abolition of all commercial treaties, the encouragement of home industries, the levying of import duties upon the manufactured products of foreign states which refuse to receive our goods in "fair exchange," and the taxing of food from non-reciprocating countries, with various other minor objects. I inclose, for your information, some particulars of this League, including the list of those who form its preliminary consultative council. You will perceive by these names that quite a large number of substantial men have joined the movement, especially in the large manufacturing centers. Birmingham, London, Sheffield, Bradford, Liverpool, Halifax, Glasgow, &c., all aid the association in this way, in addition to which branches have been formed in several of those towns and cities. What, with one or other of these centers of agitation, the Cobden Club people are experiencing quite a lively time, and are busily engaged in publishing pamphlets, &c., for the purpose of demolishing and discrediting what they are pleased to term the "reciprocity craze." Mr. Bright has also written another strongly phrased letter condemning the folly of these "silly persons." A national conference on the subject of "fair trade" has been sitting in London during the past week, with very large attendance of delegates. At the first meeting on Wednesday, on the motion of Mr. Charles Williams, Mr. S. W. Maddocks, president of the National Brassworkers' Association, Birmingham, was voted to the chair, and Mr. Richard Hunt, of Bristol, to the vice-chair.

The chairman, in opening the proceedings, said they had a very important duty to perform—a very serious one. They were now involved in what he considered one of the most serious crises that they had ever experienced, so far as the industries of this country were concerned. (Hear, hear). He appeared as the representative of a workingman's organization, and had been hitherto, and was, a Liberal; but on that occasion he considered it their duty to sink all party feeling. (Hear, hear). They had a national duty to perform, and they had to deliberate upon a question which affected the working classes, and all classes throughout the dominions of this country. (Hear, hear). Now, it was said that this question of fair trade was nothing but the monster of protection in disguise. If they dared to utter the words "fair trade" in Birmingham or anywhere, or any other term which suited them, it was regarded as the old Tory dodge of getting in the thin end of the wedge of protection. He must give his fellow-countrymen credit for better sense. (Cheers.) He was there because he had a conscientious conviction that in taking the course which was recommended they would conduce to the future welfare of the working men. He had been through the country pretty well during the past week. He had been to the North of England and had canvassed his own town, and he found that this question was rapidly growing. They were pointed to the good times which we had had by having free trade, which was nothing but fettered trade; and they were also told that it had brought them cheap food. But what was the good of cheap food to the British workingman when he had no employment and was getting no money? It would be better for them to have food a little dearer, getting plenty of money to pay for it. Starving men could not get hold of the idea that free trade was a blessing, and that it had brought them abundance of food; therefore he hoped and trusted they would go to their localities and set about in earnest to effect such a reform of our trading interest as would give the British workman in future a fair field and fair play. (Cheers.) At the present time the French Government were negotiating a new treaty with our government, and it appeared to him that the British Government were desirous of accommodating the French Government, unless some influence were brought to bear that should have the effect of checking them. He thought France had the best of the bargain so far, and he did not see why she should have it any longer. So far as he was concerned, he would rather see no treaty at all than that France should have every advantage. (Cheers.) He had been very much struck with the speech of Mr. MacIver at the Sheffield Cutlers' Feast, in which he stated that we had imported in 22 years £700,000,000 worth of French goods, and in that time had sent to France only £250,000,000 worth of British goods. The question was whether it would be right and just to the British workingman that such a treaty should be repeated that would give France a still further advantage over us. (Hear, hear.) He could not think for a moment that Englishmen, having a love for their country, would accept anything which was calculated to betray English interests. The man who would do that was no Englishman, he cared not whether his name was Gladstone, Bright, Chamberlain or anything else. (Cheers.) So far as Mr. Bright was concerned, was it right, was it consistent that he should place himself against the intelligence of the whole world? (Hear, hear.) Were there no clever men in other countries—no clever Frenchmen, Germans or Yankees? What was reciprocity? Fair commercial relations. It was the assertion that other nations should give us what we give them. It was the assertion that if foreign nations would shut us out of their markets by protective duties, we had a perfect right to teach them the stern fact that this question had two sides. (Cheers.) The policy of free trade had been tried long enough. It had been found wanting—it was neither more nor less than a failure. (Cheers.) Free trade all over the world was a grand principle, but free trade in England and protection all over the world was another thing altogether. It was not good enough for him. (Cheers.) That was fettered trade—lop-sided trade. Let them say to other countries: "Give us the same opportunities in your markets as we give you in ours, and all will be right. Failing that, bear in mind that we will retaliate by taxing your goods as you tax ours." (Cheers.) If there was to be protection throughout the rest of our empire, let us have it in this country; if there was to be free trade in this country, let us have it throughout the empire. (Cheers.) Apart from Toryism, Liberalism, Chartism, or any other "ism," the question was a national one concerning them all, and they would pursue it until such time as they had fair play throughout the whole world. (Cheers.)

The Hon. Secretary (Mr. Smallman Smith) read a series of resolutions which it was proposed to submit to the conference. The following was the preamble to these resolutions: "Whereas peace, industry, and freedom of commerce encourage trade and increase the wealth of the nation, the wisest policy, as well as the most advantageous, is that which tends most to encourage the practice of those enduring principles. Unfortunately, a policy the very reverse of this has been adopted, and is acted upon by all countries except Great Britain, not excepting even the principal colonies and dependencies of the British Empire, each government excluding foreign productions with the avowed object of using their own and benefiting their own productive forces. The reasoning upon which this policy is founded if carried into practical effect would result in excluding the products of British labor from all foreign markets; and whereas the commercial policy pursued by England during the last thirty years has not, as it was predicted, tended to counteract the commercial hostility either of foreign powers or our own colonies and dependencies, it follows that England should not allow it to be taken for granted that she will recklessly maintain her conciliatory policy, but hold out the threat of retaliatory measures, and, if necessary, strictly enforce them in order to secure fair competition for her national labor in the markets of the world."

Mr. Thomas Hodge, Bristol, briefly named the first resolution: "Be it, therefore, resolved that the distress at present existing among the working classes of this country calls for immediate redress, and that the government should forthwith take into consideration the restrictions placed upon trade by foreign powers, and adopt measures calculated to give greater freedom to British commerce, and thus increase and develop the resources of the empire." Mr. Chas. Williams, Birmingham, seconded the proposition, which was spoken to and carried unanimously.

Mr. Peter McStay, secretary of the Liverpool Town Trades' Council, moved: "That considering the vast and constantly increasing importance to England of her colonies and dependencies, and of her colonial trade, and these colonies and dependencies, unlike those of France, are entirely unrepresented in the Imperial Parliament; considering also that commercial and political treaties deeply affecting colonial interests are continually being entered into by the imperial government, without affording the colonies any opportunity of publicly expressing their views on such matters as more immediately concern them; this conference is of opinion that, in all imperial and international treaties, where colonial interests, fiscal or other, are directly or indirectly involved, the views of the colonies themselves should be ascertained, and due weight be attached to their opinions; and that, effectually to attain this object, each dependency, colony, or group of colonies, should, like a territory of the United States of America or a French colony, be privileged forthwith to commission one if not more representatives or delegates to the National Parliament, with power of speech and with or without power of vote, as possessed by those of the French colonies." Mr. Samuel Peters, General Secretary of the Sugar Operatives of Great Britain, Bristol, seconded the motion.

Mr. J. M. Hyde (National Fair Trade League) moved, as an addition to the resolution, "and that, therefore, in the opinion of this conference it would be most unwise on the part of the government to enter into any new treaty with France which would not secure equal and just terms on both sides."

This addition was adopted, and the resolution, as amended, was carried.

Mr. W. J. Harris (director of the London docks) considered that this country suffered to the extent of £100,000,000 sterling a year by the present principle of free trade adopted. He did not believe that the imposition of a tax on corn would raise the revenue of this country, because it would lead to another introduction of a substitute for flour.

Mr. John Fox (general secretary of the Bristol, West of England, and South Wales Trade and Provident Association) moved: "That the members of this conference engaged to co-operate, irrespective of party politics, in the most strenuous legitimate efforts to induce the governments and legislatures of Great Britain and her colonies and dependencies to enter into negotiations for the abolition of all tariffs in restraint of free trade throughout the Empire, and, if need be, for the creation of an Imperial fiscal or customs union, as far as possible in accordance with and confirmatory of the principles of universal free trade."

Mr. Rorison (Clyde Sugar Operatives) seconded the motion.

Mr. C. Williams (Birmingham) moved: "That, in order to carry into effect the foregoing resolutions, and with a view to promote the material interests and preserve the political unity and integrity of the British Empire, this conference desires to form an association which shall be called 'The National League,' having its headquarters in London, and which shall have for its object the consolidation of the Empire by an inseparable political union or confederation between the mother country and her colonies, involving adequate representation of the colonies in an Imperial Parliament, and absolute freedom of trade throughout the whole Empire; that the members of this conference do proceed to enrol as members of the league any persons who sympathize with its objects, subject to such laws and by-laws as the council of the National League may from time to time frame." Mr. Alexander Clark (Liverpool) seconded the motion, which was carried without opposition.

FOREIGN.

FRANCE.

(Monitteur des Interets Materiels.)

PARIS, Sept. 11, 1881.—*Metals.*—The weather has been stormy and unpropitious to business. Metals have, nevertheless, been more active and higher, with the exception of Spelter. We quote at the close: *Copper.*—Chili Bars, 158.50 @ 161.25; Ingots and Slabs, 165.75; Best Selected, 168.25, and pure Corocoro Ore, 156.50. *Tin.*—Banca, 248.25; English Refined, 248.75, and Billiton, Straits and Australian, 246.25. *Lead*, 37.50 @ 38.50, and *Spelter*, 41.75 @ 42.75. *Iron* remains, on the spot, 19 francs for Merchant, and 19.50 francs Beams. The forges deliver at Paris Merchant Iron at 18.50 @ 19; the 50f which the dealer makes thereon do not suffice to pay him for his trouble. In the Haute-Marne the demand, although not perhaps quite coming up to expectations, still remains tolerably good. Iron there still shows great firmness. They quote: Coke, Merchant, 19 francs; Mixed, 20; Machine, No. 20, 20.50. Wire Nails are in request in the locality at 27.50, No. 18, in large lines, and at 28 francs for smaller lots. Chains have been put up to 48 francs for Nos. 22 and 23, nor can larger lots be obtained any cheaper. In the Ardennes, in the Sedan district, there has been a good run of orders on the basis of 18 francs for Coke Iron, and at 20 francs for Mixed. Nail manufacturers in that locality have to struggle hard with Norwegian, German and English machine-made Nails. In the Meurthe and Moselle Pig Iron is taken about as fast as it is turned out, notwithstanding the increased production since various new blast furnaces have gone into operation; No. 3 Pig is firm there at 7.90 @ 8 francs. *Coal* has been a little more active at Paris since we are getting cooler weather. Shipments from St. Etienne are steady.

BELGIUM.

(Revue Universelle.)

BRUSSELS, Sept. 11, 1881.—*Iron.*—The Iron market in the Belgian districts is gaining in firmness, orders being still more plentiful. Merchant Iron remains stiff at 13 francs, on which basis large dealings transpire all along. Beams cannot be had any more under 14.50, while Sheet Iron now commands 18 francs. M. Pierard has just sold 4500 tons of Steel Rails to the Roumanian Government Railroad. Other makers are also busy in executing orders. The proper spirit seems to animate makers, which leads to a continued good trade, and augurs well for the winter season. They are willing to content themselves with moderate profits; business is therefore not frightened away, but attracted. Fortunately, speculation has so far kept quiescent, and not spoiled things, as it did two years since. Not only is there expected uninterrupted activity throughout the otherwise usually dull winter season, but some people are even sanguine enough to prepare for an active spring campaign to follow it. Pig Iron, also, looks up slightly; we quote Foundry No. 3 from 7 to 7.25 fancs, and common sorts 5.50 @ 6. *Coal.*—The demand for household purposes begins to manifest itself on the basis of 15 francs for Mixed, which is an improvement of 1 franc since the beginning of the month. A combination has been formed to give a lift to Coal prices, so far as the lower qualities are concerned; the companies mining it found it difficult to make both ends meet, but this will now undergo a slight change in favor of producers without over much hardship to the consumers.

GERMANY.

(Borsenhalle.)

HAMBURG, Sept. 11, 1881.—*Iron.*—Our Dortmund correspondent writes under date 5th inst: The improved feeling in the Iron branch has not been interfered with during the week, the receipt of large orders continuing unabated. In Puddle Pig large contracts have been made at the blast furnaces, although some rolling mills delay putting in the amount they soon will stand in need of. As for Dortmund foundry Pig, the unfavorable tendency in the Scotch and Cleveland districts has a depressing effect on it, or at least the one of keeping it stationary. From various quarters orders have been received for Spiegeleisen, and this as well as Dortmund Bessemer Pig, both tend upward. English Hematite having risen under a brisk demand. Many orders are received for Bar Iron, pillars and corners; the demand for all these is indeed on the increase, but the most urgent one runs upon coarse Sheets for boilers and Iron steamers. Hoop Iron and Wire are both in pressing demand. The department most actively engaged is the Bessemer Steel branch. Accounts from all Steel-producing countries agree in reporting an extraordinary abundance of Steel Rail orders; it is, therefore, fair to presume that the activity in this branch will not much abate for some time to come. As for bridge-building and car-making concerns they now receive less orders; but this is not the case with boiler makers, machine shops, foundries and ship yards on the banks of the Rhine. *Coal.*—Mines cannot complain of a lack of demand, but they do complain of the losses they have to sustain in the way of collections. They have in many instances sold direct to consumers instead of to dealers, and now make some bad experience. *Metals.*—Dealings during the week have not amounted to much. Lead has, nevertheless, remained firm: English Pig at 16 @ 16.50 marks per 50 kilos.; Sheet, 16.75 @ 17.20; German Pig, 15.20 @ 15.40; and Spanish, 17.50 @ 17.80. Copper is firmly sustained, Drontheim Roraas rosettes at 67 @ 68; Wallaroo Blocks, 69; Electrotype N. A. in Slabs, 74 @ 75; Lake Superior, 76 @ 77; and English Refined, 66 @ 67. Spelter is inactive at 15.75 @ 16 marks for Silesian spot and to arrive. Tin is unaltered; English Refined, 100 @ 102 and other sorts, 98 @ 100.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Sept. 6, 1881.—*Tin.*—Statistics are so favorable that they attract the attention of the trade. If we are to judge from the figures showing deliveries, consumption must have materially increased. Should the latter continue in the same ratio during the remainder of the year, it would prove in excess of production. There would be plenty of buyers at 55 guilders for Banca and 54.50 Billiton the 50 kilos., but owners hold back, and only a few of them might feel inclined to sell 250. above the rates named. Billiton, September delivery, sold at 54.50, and No. 6 ditto at 55.

STATISTICS AT THE END OF AUGUST.

BANCA.	1881. Slabs.	1880. Slabs.	1879. Slabs.
Deliveries in August	14,963	7,096	16,274
" since Jan. 1	104,303	84,044	93,625
Stock on warrants at Amsterdam	17,589	30,044	29,600
Stock on warrants at Rotterdam	8,160	9,975	16,322
Total	25,749	40,019	45,922
Stock in port in company's hands for coming auctions	61,735	50,815	52,836
Afloat	11,900	13,200	15,600
Total	99,384	104,034	94,358
BILLITON.			
Deliveries in August	8,266	12,965	10,616
" since Jan. 1	77,408	75,555	69,223
Stock here and at Amsterdam	44,956	65,357	72,725
Price of Banca, guilders.	54⅛	54	41½
" Billiton, "	54⅛	53	41

The Trades Union Congress.

ST. LOUIS, September 23.—The following call for a national congress of trades unions is published here in the *Carpenter*, the official organ of the trade:

To all Trades and Labor Unions of the United States and Canadas.—FELLOW WORKINGMEN: The time has now arrived for a more perfect combination of labor—one that will concentrate our forces so as to more successfully cope with concentrated capital.

We have numberless trades unions, trades assemblies or councils, and various other local, national and international labor unions, all engaged in the noble task of elevating and improving the condition of the working classes. But great as has been the work done by these bodies, there is vastly more that can be done by a combination of all these organizations in a federation of trades.

In Great Britain and Ireland annual trades union congresses are held. France and other countries have also similar gatherings. The work done by these assemblages of workmen speaks more in their favor than a volume of other arguments.

Only in such a body can proper action be taken to promote the general welfare of the industrial classes. There we can discuss and examine all questions affecting the national interests of each and every trade, and by a combination of forces secure that justice which isolated and separated trade and labor unions can never fully command.

A national trades union congress can prepare labor measures and agree upon laws they desire passed by the Congress of the United States; and a Congressional Labor Committee, after the manner of the Parliamentary Committee of Trades Unions in England, could be elected to urge and advance legislation at Washington on all such measures and report to the various trades.

In addition to this, an annual congress of trades unions could organize a systematic agitation to propagate trades union principles and to impress the necessity of protective trade and labor organizations, and to encourage the formation of such unions and their amalgamation in trades assemblies. Thus we could elevate trades unionism and obtain for the working classes that respect for their rights and that reward for their services to which they are justly entitled.

A federation of this character can be organized with a few simple rules and no salaried officers. The expenses of its management will be trivial and can be provided for by the Trades Union Congress.

Impressed with the necessity of such a federation, and the importance of a national trades union congress to perfect the organization, the delegates in a preliminary national convention assembled at Terre Haute, Ind., issue the following call:

"That all international and national unions, trades assemblies, or councils, and local trades or labor unions are cordially invited to send delegates to a national trades union congress to be held in Pittsburgh, Pa., on the third Tuesday in November, 1881. Each local union will be entitled to one delegate for 100 members or less, and one additional delegate for each additional 500 members, or major part thereof; also one delegate for each international or national union, and one delegate for each trades assembly or council."

Another attempt is being made to frame a new Anglo-French treaty. The English negotiators claim to be free from any compromising engagements in regard to the acceptance of specific duties, and the French Ministry, on the other hand, affirm that they are actuated by a conciliatory spirit. The mutual desire thus manifested in such frank avowals, augurs hopefully of results that shall prove mutually advantageous. Both parties in interest regret sincerely, there is reason to believe, the recent failure to harmonize, the difficulty arising having had only a remote relation to the real question—that of fixing a definite *régime* for the trade of the two countries.

The second locomotive of the Fontaine patent has just been turned out of the Grant Locomotive Works at Paterson, and is now being tested on the New York, Lake Erie and Western Railroad. The machinery of this engine is all above the boiler. A big pair of driving wheels rests on a smaller set below, moving them by friction, so that when the upper pair is going at the rate of 60 miles an hour, the lower part is carrying the locomotive at the rate of 90 miles. The first locomotive of the kind turned out, it is said, made 90 miles an hour with ease on a Canadian railroad. The inventor enthusiastically predicts that this one will be driven at the rate of one hundred miles an hour.

Telegraphic Codes and Signals.

A number of New York merchants, doing business in the far East, find great economy in adopting a code which enables them to maintain constant communication with their correspondents at a minimum expense. An expert, who makes a specialty of code-making, says:

All you have to do is to make a list of phrases which you have frequently to use in your business and represent them by a corresponding list of single words. There are houses spending as much as $30,000 a year for telegraphic advices, and a system which will put their messages into few words effects a very great saving for them. I have made a combination code for one house here by which the entire state of the Japanese tea market can be put into seven words. Those seven words will convey to them the date of steamers sailing, the state of the market for nine grades of tea, the rates of freight by six routes, the amount of purchases for Europe and the United States, the grades upon which the demand is running, the principal buyers, rates of exchange, the number of packages sent in the day's shipments, and the points to which they are consigned. I have made a code by which the amount of sales of flour, butter and cheese, the state of the market for each, and the amount of money paid into the bank are sent daily to a house in this city by its branch at Liverpool, the whole message being put into two words.

Large houses prefer to have their own codes. One large banking house for whom I prepared a code had a printing establishment set up inside the bank building, so as to make certain of receiving all the copies of the code that were printed. Some of the codes used by large houses are very voluminous. Brown Bros. & Co. have a code of 64,000 words; Thomas & Co., 67,000; Moske Bros., 60,000; Drexel, Morgan & Co., about 45,000 words. We have to ransack all languages to get so many words which shall all be telegraphically dissimilar.

Some stock operators make use of cryptograms, and get them up themselves. A method used a good deal is to have a simple code, in which the words denoting the phrases to be conveyed are numbered, and simply the numerals are sent. Such a code can be used so as to conceal messages, even from a person getting hold of the code, for numerals may be sent which only the proper person will understand to differ by a certain amount from the numerals denoting the phrases really conveyed. I knew one in use in which the rule was to add the date of the month to numerals of messages from a branch house. Thus, if the figure 5 came on the 20th, they would look for the meaning of 25 in the code book. The use of codes and ciphers is very large, but the use of the highly condensed codes, where not only words but their combinations convey meanings, is not so wide as would be expected from its great economy. It takes some time and trouble to learn to use such codes with facility, and this retards their introduction, but they are coming more and more into use every year.

Mr. John Roach, speaking of the frequent failures of steamship shafts, remarked that "iron has its time of usefulness, just as man and horses have." This fact is fully recognized by railroad men and bridge builders, whereupon the *Northwestern Lumberman* remarks: "This mortality in iron and steel, under vibratory influence, may account for the bursting of circular saws, which often causes sad havoc of life and limb in mills. The intense vibration of the dizzy steel, by reason of its long use, at last brings the inevitable weakness, and it suddenly flies in pieces. If sawyers could arrive at some definite knowledge as to the life of a circular saw, as the railroad men do as to the endurance of axles and wheels, many serious accidents might be avoided." It is quite probable that some of our manufacturers might furnish the desired information.

The Keystone Bridge Co., of Pittsburgh, have opened a drawing school, to which free access is given to all their employees. A competent instructor has been engaged, and on two evenings in the week rooms are thrown open for instruction in mechanical drawing for all who choose to come. The company furnish gratis all drawing materials, books, &c., needed by the students.

We regret to record the untimely decease of Wm. H. Price, former secretary of the World's Fair Commission. A dose of corrosive sublimate, taken by mistake for medicine, proved almost immediately fatal. In trade circles he was widely known as editor and proprietor of the *Grocer*.

It is spoken of as a fact without precedent in the history of American industries that, as the rule, manufacturers are too much pressed with orders to permit them to produce specimens of their handiwork at the public exhibitions usually given at this season of the year.

Prolonged efforts have been made in the paper trade to secure a foreign market for their products, and it is now stated that contracts have been closed, for delivery in English markets, at prices as good as can be obtained here.

It is positively stated by Philadelphia papers that the permanent exhibition building has been sold to various purchasers, and that it will not be re-erected as a whole in any one place.

A Berlin dispatch says: Herr Krupp, of Essen, has accepted a contract for the exportation of 25,000 tons of steel rails to the United States.

WHY
THE GRIFFIN SCROLL SAW BLADES
Are the Best in the World.

1. They are the strongest.
2. They cut fastest.
3. Each tooth has a "set."
4. They will turn a sharper corner.
5. They cut the smoothest.
6. They are the cheapest.

One Griffin Blade will outwear four of the best Paris or any six of the American Blades.

The Griffin Blades are for Sale at most Hardware Stores.

HOLMDEL, N. J., Dec. 10, 1880.

MESSRS. PERRY MASON & CO.—GENTS: I do a great deal of fret sawing, and have used many kinds of blades, but I find the Griffin Blades the best. I find that they cut more than twice as fast as the best Paris blades, and will last about four times as long. Yours truly, HENRY J. SCHANCK.

We have hundreds of letters from those using the Griffin Blades, which speak of them in the highest terms.

We are the sole agents for these blades in New York. If you do not find them at the hardware stores, we will send them to you at the following prices, postage paid:

Sizes from No. 1 to 6 inclusive, 15 cents per dozen, or $1.25 per gross.

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We have a full stock of Lester, Rogers and Cricket Saws, Wood, Designs and all things else in the bracket sawing line.

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HEATON & DENCKLA HARDWARE CO.,
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E. & G. BROOKE'S "Anchor Brand" Nails, Brads, Spikes, &c.
MALLORY, WHEELER & CO.'S Door and Pad Locks.
UNION MANUFACTURING CO.'S Butts.
AMERICAN SCREW CO.'S Screws.
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FRANCE'S Shutter Holders.
Anti-Window Rattlers, Brass and Nickel-Plated.
WESTERN FILE CO.'S Cast-Steel Files.
AMERICAN SHEAR CO.'S Shears and Scissors.
HP NAIL COMPANY'S Wire, Steel, Iron and Brass Nails and Barbed Nails.
STEELE & SONS' Wrought Handle Sad Irons.

EXCELSIOR MILLS. Genuine Turkish Emery.
BROWN & BRO.'S Silver Plated Spoons and Forks.
GAYLORD MANUFACTURING CO.'S Till, Chest and Cupboard Locks.
AMES' Genuine "A" Chester Emery.
COLWELL & COLLINS, NORWAY BOLT CO., Norway Carriage and Tire Bolts.
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Also a large line of Heavy and Shelf Hardware.

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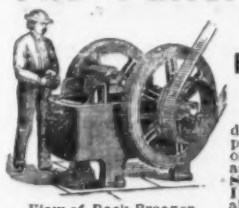
ANSONIA, CONN.,

Manufacture improved

ROCK & ORE BREAKERS,

(THE "BLAKE" STYLE),



View of Rock Breaker.

designed for breaking to small pieces and one-third dust all kinds of hard and brittle substances, such as **Quartz, Emery, Gold and Silver Ores, Coal, Plaster, Iron, Copper and Lead Ores**; also, **Stone for making Concrete and Railroad Ballast.**

Premium of Excellence, American Institute Fair, 1879.

Twenty years of practical test, at **Home** and **Abroad**, has proven this machine to be the best one ever invented for the purpose. Mr. S. L. MARSDEN, for the past fifteen years connected with the manufacture of these machines, has charge of this department of our works, and will personally superintend their erection within a reasonable circuit. **Chilled Rolls and Rolling Mill Machinery; Power Presses**, single and double acting; also, **Hammers**, Drops and Lifters: **Shafting, Pulleys and Hangers.**

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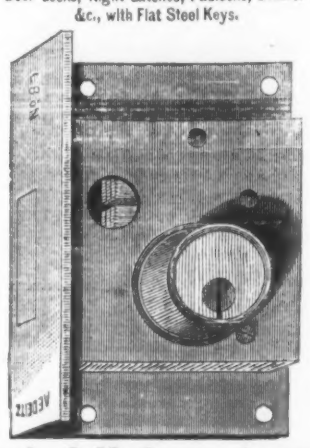
Manufacturer of

Store Door Locks, Night Latches, Padlocks, Drawer Locks, &c., with Flat Steel Keys.



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Original Inventors and Sole Patentees of

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STEEL SHUTTERS,

FIRE AND BURGLAR PROOF. ALSO IMPROVED

ROLLING WOOD SHUTTERS,

Of various kinds. And Patent

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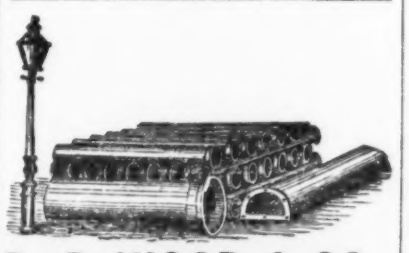

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Cast Iron Pipe

FOR WATER AND GAS,

Lamp Posts, Valves, &c.,

Mathew's Pat. Anti-Freezing Hydrants.

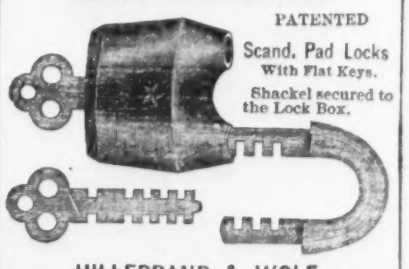
400 CHESTNUT STREET.

STAR LOCK WORKS.

ESTABLISHED 1836.

Trunk Locks, Pad Locks, Dead Latches, Door Springs, Trunk Stays, Keys, &c., &c.

110 South 8th St., and Sansom, bet. 8th and 9th, PHILADELPHIA.



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A COILED STEEL WIRE CORD

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Send for explanatory circular and price list.

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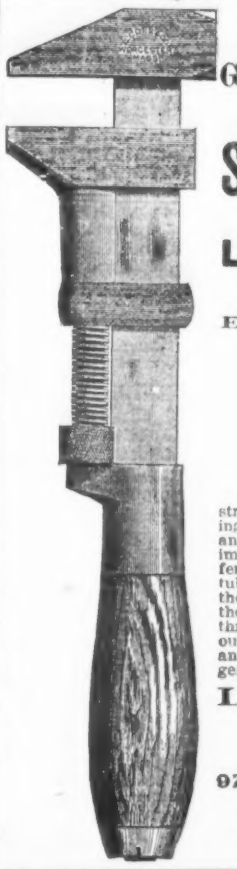

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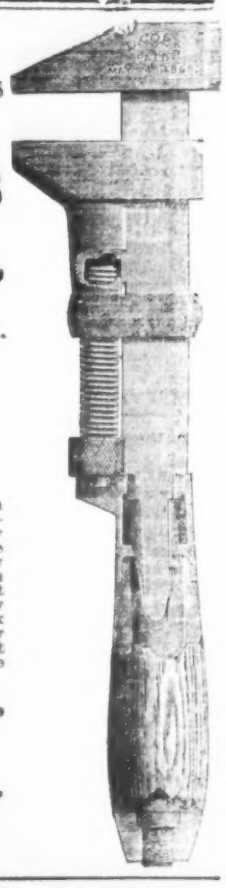

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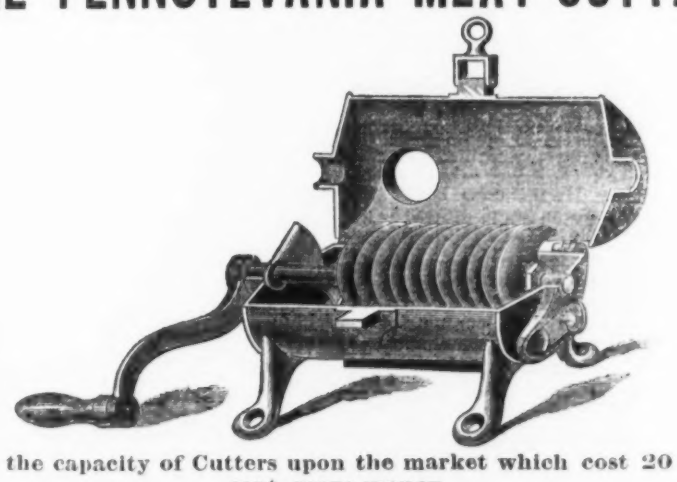

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Nos. 1 and 2 are packed ½ dozen in a box; No. 3 packed ¼ dozen in box.
Discount to the trade 50 per cent. Orders solicited.

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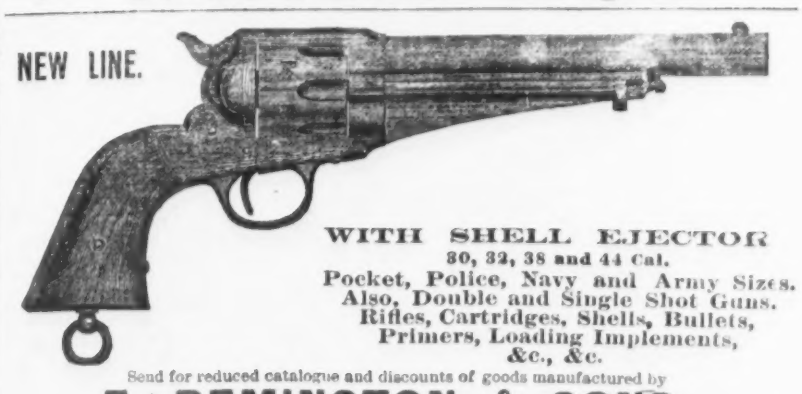

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N. B.—One man can raise 600 lbs. with ease, and lower same at any desired speed, and by use of brake suspend load at pleasure. Adapted to the wants of merchants, manufacturers, railroads and farmers.

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105 Chambers Street,
NEW YORK AGENT.

S. H. & E. Y. MOORE,
163 & 165 Lake Street,
CHICAGO AGENTS.

The Canadian Provincial Exhibition.

The Industrial Exhibition at Montreal is now at its hight, and the leading manufacturing companies are well represented. The Canada Saw Works; the File and Spring Co., of Montreal; the Oshawa Stove Co., Montreal Axe Works, Canada Horse Nail Co., Messrs. R. A. Buchanan & Co., and the Brown and Williams Mfg. Co., of Stratford, Ont., are among the prominent exhibitors.

An admirable invention, says the *Montreal Herald*, is shown in the Machinery Hall, called the "Watson Electric Railway Semaphore Signal," which must eventually supersede the semaphore in use on our railways at present. By its use evil resulting from the negligence of officials will be greatly lessened. It consists of an indicator and key placed in the station operator's room, connected with the semaphore by two ordinary telegraph wires. The arms of the semaphore revolve in the same manner and time as the hand of the indicator, and the operator can at once tell at what signal the lever stops. At each pressure of the key, about an eighth of a circle is passed over by the arm of the semaphore. This operation is repeated until the required position is reached. Within the lantern four plates of red and green glass revolve in the same manner on each side of the lamp. If, for example, the line is not clear, these glasses are revolved until a red disk covers the lamp. The arm of the semaphore is then in a horizontal position and the indicator points to R, or red. The advantages of this semaphore are great. In the first place, it costs less than the one now in use, no more plant being required than—as we have said before—two ordinary telegraph wires, instead of the post and heavy wires used in the old ones. It is economical in working, as the signal can be worked by the operator. It ensures also the greatest safety from accident in the event of anything happening to the wires or indicator, as in this case the arm and lamps will automatically indicate danger. The mechanism of weights moving the arm must be wound up every evening, an operation which cannot be done until the lamp is lighted. Carelessness on the part of an official is thus precluded. The signal is specially adapted for use during the winter months, as its action is not influenced by ice or snow on the wires. Altogether it is an inestimable improvement in railway signaling, and its inventor may be regarded as a benefactor of all travelers. Messrs. John Taylor & Bros. are the agents in town, from whom particulars may be obtained on application.

Test of a Ventilating Apparatus.—The system of ventilating cars devised by Mr. Andrew J. Chase, of Boston, was put to a test on a car on the Boston and Albany road September 12, which is thus described by the Boston *Herald:* There are two general principles involved in the apparatus used in this system. One, the supply of fresh air, freed from dust, cinders, &c.; the other, the expulsion of the foul air generated by the lungs and bodies of the occupants of the car. The air, as the train passes rapidly onward, is caught by a kind of scoop, or mouth, and is forced, cinders and all, downward through a pipe into a reservoir, where it strikes the water contained therein with sufficient force to be driven through it. After being thus cleansed and cooled the air is forced, by the pressure of the descending column, upward through another pipe or funnel and discharged into the body of the car. This air, being pure and cool, naturally gravitates to the bottom of the car, displacing the warmer vitiated air, which then ascends to the top of the car, where it is got rid of by an ingenious device. This consists of two long pipes or tunnels laid upon the outside of the car, on each side of the monitor top. These tunnels are jacketed at both ends by a large pipe, having a kind of bell mouth, to better gather in the air. Through these outer bell-mouth tubes—that is, the rear ones—the external air rushes with a velocity proportioned to the momentum of the car. This air, by its rapid movement, serves to syphon or pump the vitiated air out of the car, the tunnel used being connected with the interior of the car by a small syphon pipe, through which the foul air is thus withdrawn. There are valves at both ends of the tunnels, which act automatically, the ones in front being closed by the pressure of the atmosphere when the car is put in motion, while the rear ones are opened by the same pressure being exerted through the bell-mouthed jackets.

New Form for Rails.—Prof. J. W. Robinson, of the Department of Mechanical Engineering, State University of Ohio, says in regard to the improved ∩-shaped rail, that the improved concave rail is not a mere chimera. It has already been subjected to the severest tests in practice and given satisfaction. I am informed that a third of a mile of the 45-pound iron rail has been put in place of 56-pound steel rails on a grade curve in the main track of the Chicago and Western Michigan Railroad, and that this is giving excellent satisfaction. Also, four miles of logging road, laid with 25-pound iron rails, has been in use some time. Investigation of the endurance of the line has decided other parties to use the same rail for logging roads. Attention is called to the fact of logging roads, for the reason that such roads are temporary and consequently poorly graded and ballasted, full of short curves and irregularities, &c., such conditions are evidently far more severe upon rails than those incident to good, solid, well-laid roadbeds. Also, the four-wheeled cars of these roads, bearing heavy loads of logs, are severe upon rails. Indeed the rail is often found with the sides of the head split down, when used on these roads. A rail thus damaged would evidently be dangerous for use, as the sharp top edge is now very weak. Also the gauge of track is widened by the thickness of the half rail head, and the wheel flange may strike dead upon the next rail head. The corresponding failure of the concave rail has occurred, viz, the head, worn very thin, has in one or two instances been split lengthwise down through the middle to the wood filling. But the parts of the rail remained in place, preserving the proper gauge of track, and trains were safely run for several weeks following the discovery of the defect.

The Tin Plate Trade.

The Newcastle *Chronicle* says: There is at the present time more "movement" in the tin plate trade than in most other branches of the iron trade. The great works of Messrs. Booker, near Cardiff, erected at a cost of £400,000, are said to have been sold, and there are other indications that the demand is now overleaping the restricted production. The tin plate trade is one of the clearest examples of the fluctuations of the metallurgical industries and of their migrations. At one time the manufacture of tin plates was monopolized by Bohemia, and it is now restricted to very few regions. It is about two centuries since the first tin-plate works in this country were established at Pontypool, and that for a long period unsuccessfully. At the beginning of the present century there were only nine establishments for the production of tin plates in this country, and it is a comparative slow growth that has been known, for the latest official statement places the number of existing works at 81 only. About 44 of these works are in Glamorgan and Carmarthenshire, 22 in Monmouthshire and Gloucestershire, 10 or 11 in Staffordshire and Worcestershire, and the remainder in other districts—chiefly near Glasgow. The number of tin, terne and black plates made in a year is rather over 4,250,000 boxes in Great Britian. Of these, usually the United States buys one-half or more from us for roofing, for packing preserved fruits, fish and meats, and for the transit of oil. France, Holland, Germany, Scandinavia and other countries take up the bulk of the remainder, the quantity apparently retained for use in the United Kingdom being small. Out of the 4,250,000 boxes made in the last year reported on officially, indeed, about 3,500,000 boxes were exported—more than half from Liverpool, and London, Bristol, Swansea, and Cardiff shipping the greater part of the remainder. Although Bohemia still makes a small quantity, and France and the United States are also manufacturers, Britain is the great maker for the world at the present time of this article, whose use is yearly widening, and, as we have seen, Wales is at the present time the great center of the manufacture, while America remains the chief market. In that fierce demand that set in from the United States two years ago for iron goods, tin plates shared, but a year ago the inevitable fall occurred, and prices retreated. Restriction of make followed, and now a more healthy state of the trade has returned. The demand is fair, is increasing, and is from a widened area. In that enlargement of the trade there is an opportunity for the entrance of the North of England into the manufacture. It needs new sources of consumption for its pig iron, and the experience of Staffordshire and Coatbridge shows that new districts can now enter into the trade that was once so carefully monopolized. The tin needed can be brought more cheaply to the North than it can to Scotland. There is now from the Tyne and neighboring ports ample and direct communications with the great markets for tin plates, and it needs only enterprise to locate in this district that growing manufacture of which Great Britain has so largely a monopoly, and the use of the product of which may be expected to grow not only in the United States, but also with our colonies.

The eleven cannon taken from the fort at Santo Domingo, soon after the recent fire, and sent here by the Government for sale, have been disposed of by J. B. Vicini & Co., to whom they were consigned. They have sold the guns to a dealer in scrap metals, who will melt them and convert them into statues. The cannon weigh about 23,000 pounds, and brought less than $5000. One of the pieces bears the date of 1630, and others were cast at Douay in 1748 and 1755.

The Department of State is in receipt of a communication from the British legation at Washington, relative to the exhibition to be held in London of apparatus of all kinds devised to prevent smoke. This exhibition will open October 24, and the department has been further informed by the Charge d'Affaires at Washington that the committee has decided to consider favorably all applications from foreign exhibitors throughout September, and they will, as far as possible, reserve space for late exhibits, so that none may be excluded.

The executive board of Rochester, N. Y., proposes to improve its fire system at a cost of $6000. A new $3000 bell will be put in and the alarm-box system so changed that while an alarm is coming from one box it will automatically prevent any other from being struck and so that lightning cannot injure the boxes.

The Iron Age Directory

and Index to Advertisements.

NEW YORK WHOLESALE PRICES, September 28, 1881.

METALS.

IRON.—DUTY Bars, 1 to 1½c ₩ lb; Sheet, Band Hoop and Scroll, 1¼ to 1¾c. ₩ lb; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ lb; Wrought Scrap, $8 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. @ 100 lbs. Boiler and Plate, 1½c. ₩ lb.

IRON—AMERICAN		
Foundry No. 1	₩ ton	25.00
" No. 2X	₩ ton	23.00
Gray Forge	₩ ton	21.00
SCOTCH.		
Eglinton	₩ ton	21.50 @ 22.00
Carnbroe	₩ ton	22.50
Coltness	₩ ton	26.00
Glengarnock	₩ ton	23.00
Gartsherrie...(None in market)...		
Langloan	₩ ton	25.00
Rails.		
Iron	₩ ton	$48.00 @ 49.00
Steel (at mill) (1882 delivery)	₩ ton	45.00 @ 50.00
Old Rails Te	₩ ton	27.50
Old Rails D H	₩ ton	30.00
Scrap.		
Wrought Scrap ₩ ton		28.50 @ 30.00
Bar Iron, from Store.—		
Common Iron:		
¾ to 1 in. round and square	₩ lb	2.10
1 to 6 in. x⅜ to 1 in.	₩ lb	
Refined Iron		
¾ to 2 in. round and square	₩ lb	2.70
1 to 6 in. x⅜ to 1 in.	₩ lb	
1 to 6 in. x¼ and 5-16	₩ lb	2.90
Rods—⅜ and 11-16 round and square	₩ lb	2.80
Bands—1 to 6x¼-16 to No. 12	₩ lb	3.20
Norway Nail Rods		6¼ @ 6½c

Sheet Iron.

	Common American	R. G. American.
Nos. 10 to 20	₩ lb 3¾	5
" 21 to 24	₩ lb 4	5
" 25 to 26	₩ lb 4⅛c	5¼
" 27	₩ lb 4¼c	5½
" 28	₩ lb 5 c	5½

	B.B.	3d qual.
Galvanized, 10 to 20	₩ lb 7¼c	7c
" 21 to 24	₩ lb 8½c	7½c
" 25 to 26	₩ lb 9c	8c
" 27	₩ lb 9½c	8½c
" 28	₩ lb 10½c	9c
Patent Planished	₩ lb 10½c	B 9½c
Russia	11	@12 c
American Cold Rolled	₩ lb 5	@7½c

COPPER.—DUTY: Pig, Bar and Ingot, 4c; Old Copper 4c lb; Manufactured (including all) article of which Copper is a component of chief value, 45 % ad valorem.

American Ingot ₩ lb See Trade Report

SHEATHING BRAZIERS COPPER, BOLTS, &C.

Braziers' Copper, ordinary sizes, 16oz. per sq. ft., and over per lb	36c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₩ sq. ft.	₩ lb 28c
Braziers Copper 10 oz and 12 oz., ₩ sq. ft.	₩ lb 30c
" Lighter than 10 oz., ₩ sq. ft	₩ lb 32c
Circles less than 8¼ in. n diameter	₩ lb 35c
Circles 8¼ in. diameter and over	₩ lb 32c
Segment and Pattern Sheets	₩ lb 30c
Locomotive Fire Box Sheets	₩ lb 26c
Sheathing Copper, over 12 oz. ₩ sq. ft.	₩ lb 24c
Bolt Copper	₩ lb 26c
Copper Bottoms	₩ lb 37c

No Copper in Sheathing except 14x 6 inches and not to exceed 34 oz. to the sq. ft.

TINNING.

4x8	₩ sheet 6c

Other size Sheets, 3½c. per square foot.
For tinning both sides, double the above amount

O'REILL'S PATENT PLANISHED COPPER.—Net.

14x48.

14 and 16 oz. and heavier	₩ lb 34c
12 oz. and lighter	₩ lb 37c

By the case. ₩ lb 33c " " ₩ lb 36c

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier. ₩ lb 36c By the case. ₩ lb 35c
(And all sizes not over 20 in. wide.
24x48x30x60.
14 and 16 oz. and heavier ₩ lb 38c
oz ₩ lb 41c

Brass.

Brown & Sharp's Gauge the Standard for Metals. Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis. Nominal. June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantity than 100 lbs. add 3c ₩ lb.

HIGH BRASS.

All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in. 30c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive 34c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 38c
1c ₩ lb advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 8 is Platers' Brass, at 43c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c
Planers' Rules 45c
Sheets wider than 30 in. and under 40 in. 47c
" 40 in and over 50c
Circular Sheets, in diam. from 2 in. to 14, inclusive. 50c
" " over 14 " 20, " 45c
" " " 20 " 30, " 49c
" " " 30 " 40, " 44c
" " " 40 in 59c

LOW BRASS.

4c ₩ lb more than High Brass,
Gilding Metal, 8c ₩ lb more than High Brass.

Platers' or Gold Metal	In Bars	48c
	Sawed	51c
	Planed or Polished	54c

FOR SLITTING.

Metal in width in. to ⅛ in. to No. 28, inclusive, 1c. ₩ lb advance.
Metal, in width 2 in to 1 in. thinner than No. 28, 2c. ₩ lb advance.
Metal, in width 1 in. to ⅛ thinner than No. 28, 3c. ₩ lb advance.
Metal, in width ⅛ in. to ¼, inclusive, not thinner than No. 28, 2c. ₩ lb advance.
Metal, in width ⅛ in. to ¼ thinner than No. 28, 3c. ₩ lb advance.
Metal ¼ in. in width and less, 10c. ₩ lb advance.
Any of the above widths cut to particular lengths, add 7c. ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE

	Market Metal.	Wire.
4 per cent., 12 inch to No. 26	$0.43	$0.70
8 " " "	.56	.76
10 " " "	.64	.82
14 " " "	.74	1.03
15 " " "	.80	1.12

German Silver Sheets over 12in. wide and weighing more than 10 lbs., $2.00 ₩ lb.
Advance 2c. for each additional inch in width above 12 in. and 2c. ₩ lb on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers, at 50c ₩ lb additional.
Germad Silver Scrap one-half less than net price of 12 in Market Metal. German Silver Turnings, Filings and Clips, half the price of Scrap.

	BRASS AND COPPER WIRE. High Brass.	Low Brass.	Gild'g and Copper.
No.0 to 20	$0.33	$0.37	$0.43
No.21	.30	.40	.46
No.22	.37	.41	.47
No.23	.38	.42	.48
No 24	.40	.44	.50
No.25	.43	.47	.54
No.26	.45	.49	.56
No.27	.48	.52	.58
No.28	.52	.56	.63
No.30	.55	.59	.66
No.30	.68	.62	.72
No.31	.62	.66	.78
No.32	.66	.70	.84
No.34	.70	.74	.93
No 34	.74	.78	1.03

Spring Wire 2c ₩ lb advance.
Flat, Square and Half Round Wire 4c ₩ lb advance on Round Wire.
Fancy Wire not less than 10c ₩ lb advance of Round Wire.
Brass Rods, No. 8 and larger, not less than 2 feet lengths, 38c.
Wire straightened and cut, smaller than No. 8 and not less than 2 feet lengths, 43c.
Wire and Rods less than 2 feet lengths, special rates
Twelve cents per lb extra for spooling on 1 lb spools.

MISCELLANEOUS.

Brass Pall Ears	$0.50
Brass Door Rail	.43
SCRAP.—dis. Nominal.	
High Brass Scrap	12c
Low "	14c
Oil Ring	10c

Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis. Nominal.

	₩ lb
Plain No. 7 inclusive above ¼ in. to 3 in.	$0.43
above 3 in.	.53

Os. 21, 22, 23, two cents advance on List for each Number.
Os. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.

Plain ¾ inch	.70
" ½ "	.80
" ⅜ "	1.06

All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No 20
English, Scotch and Extra Patterns Fancy Tubing to No. 20
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cent ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in. 2 cents per pound advance.

ZINC TUBING—dis 20 %.

Plain	.27
Fancy	.33
Scotch and Extra Patterns	30

GERMAN SILVER TUBING.—dis 10 %

4 Per cent.	.80
8 "	.90
9 "	1.0
12 "	1.20
15 "	1.35
16 "	1.45
18 "	1.40
20 "	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils valued at 7 cents ₩ lb., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ₩ lb; over 11, 3½ cents ₩ lb., and 10 % ad val. Railway Bars, 1¼ cents ₩ lb. Railway Bars, in part Steel, 1 cent ₩ lb. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.—		
" Best Cast	₩ lb	15½c
" Extra Cast	₩ lb	18½c
" Round Machinery, Cast	₩ lb	10c
" Swaged, Cast	₩ lb	18c
" Best Double Shear	₩ lb	15½c
" Blister, 1st quality	₩ lb	13c
German Steel, Best	₩ lb	11c
" 2d quality	₩ lb	10c
" 3d quality	₩ lb	9c
Sheet Cast Steel, 1st quality	₩ lb	15½c
" 2d quality	₩ lb	14½c
" 3d quality	₩ lb	13½c

ANTIMONY See Trade Report

LEAD.—DUTY Pig $2 ₩ 100 lbs; old Lead, 1½c lb ₩ Pipe and Sheet, 2½c ₩ lb.

American	4½ @ 4¾c
Bar	.00 @ 00c
Pipe	.7c dis 10 %
Tin Lined Pipe	.140, dis 10 %
Sheet	.7½c, dis 10 %
Shot	Drop 7c, Buck, 8c
Chilled Shot	8c

BABBITT METAL.

N. P. U.	₩ lb 7½ @ 80

A 25c: B. 20c: C. 14c.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ₩ lb; Electro-galvanized Plates, 2c ₩ lb; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.

Banca	lb	25 @ 26c
Straits	₩ lb	22 @ 22½c
English	22	@ 22½c

TIN PLATES.

I C 10x14 } 14x20 }	Prime Charcoal	$6.25 @ $6.50
I C 12x12	"	6.50 @ 6.75
I X 10x14 } 14x20 }	Charcoal	$8.00 @ 8.25
I X 12x12	" "	8.50
D C 12½x17		6.75
D X 12½x17		7.75

For each additional X add 1.00

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14 } I C 14x20 }	$6.00	4.25 @ 4.75
I C 12x12	6.25	4.50 @ 4.75

TERNE PLATE

	Prime Char.	2d qual.	Coke.
I C 14x20	$4.50	4.25	5.00 @ 5.25
I X 14x20	7.25	....	....
I C 20x28	11.50	11.00	10.50 @ 11.00
I X 20x28	15.00	....	....
I C 20x200	17.00	" "	....
I C 14x20 M. F. Brand			7.50

SOLDER—½ & ¾ 14½c
Extra 13½c
No. 1 12½c

SPELTER—DUTY: in Pigs, Bars and Plates, $1.50 ₩ 100 lbs.

American, cash	6¼ @ 6½c
Foreign	6¼ @ 6½c

ZINC.—DUTY: Pig or Block, 1.40 ₩ 100 lbs. Sheet 2½c ₩ lb.

Sheet, Cask	7½c
" Open	7¾ @ 8c

Paper Stock, &c.

(Dealers' Selling Pric

White Shirt Cuttings, No. 1	6¼	@ 7
" " No. 2	5	@ 5¼
Mill Assorted Whites	5¼	@ 5½
Unbleached Muslins	5¼	@ 5½
City Whites, No. 1	4¾	@ 4¾
New Canton Flannels	5	@ 5¼
New Seconds, light	3¾	@ 4
" dark	3½	@ 3¾
No. 2 Whites	2¾	@ 3¼
Cotton Canvas	4½	@ 4½
Linen Canvas, No. 1	4	@ 4¼
Seconds, City No. 1	1¾	@ 2
" No. 2	1¼	@ 1½
Colors, per 100 lbs	75	@
Manila Rope	3½	@
" Tarred	3½	@ 3¾
Gunny Bagging, No. 1	2¾	@ 2¾
" No. 2	1¾	@ 2
Kentucky Bagging	4¼	@ 4½
Burlap Bagging, No. 1	2¾	@ 3
Tar Shakings	2½	@ 2¾
Hemp Twine Stock	4½	@ 4¾
Hard White Shavings, No. 1	3¾	@ 4¼
Soft White Shavings, No. 1	3½	@ 4
White Shavings, No. 2, soft	3¼	@ 3½
Mixed Shavings, part white	3	@ 3¼
Ledger and Writing	3¼	@ 3½
Solid Stock	2¼	@
Book Stock No. 1, light	1¾	@ 1¾
Old Newspapers	1¾	@ 2
Pure Manilas	2¼	@ 2¾
Bogus Manilas and Hardwares	1¼	@ 1¾
Commons	90	@
Binders' Board Cuttings	1¼	@ 1½
Straw Board Cuttings	1¼	@ 1¾

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ lb	20c
" Ordinary		6c
" Ivory Drop, fair		12 @ 15c
" " best		23c
Black Paint, in oil kegs 8c asst'd cans, 11c		
Blue Prussian, fair to best		40 @ 44c
" " " in oil		45 @ 50c
Blue Chinese dry		70c
" Ultramarine		18 @ 20c
Brown, Spanish		14c
" Van Dyke		10@12c
Green, Chrome, in oil		15 @ 23c
" Paris, in oil good, 25c; best, 30c		14 @ 18 @ 24c
" " in oil " 30c;		45c
Iron Paint, Bright Red	₩ lb	2½c
" Brown	₩ lb	1½c
" Purple	₩ lb	3c
" Ground in Oil, Bright Red	₩ lb	4½c
" " " Red	₩ lb	5c
" " " Brown	₩ lb	4½c
" " " Purple	₩ lb	6c
Mineral Paints		1½ @ 4c
Orange Mineral		10c
Red Lead, American		7½c
" Venetian (N. C.) dry		$1.65 @ $1.70
" In oil asst'd cans, 11c; kegs, 8c		
" Indian dry		9 @ 12c
Rose Pink		10 @ 13c
Sienna, American, Raw		4c
" Burnt		4½c
" " in oil		16 @ 20c
" Raw		11 @ 14 @ 25c
Umber, Burnt		4 @ 8c
" " in oil		9 @ 12 @ 16c
" Raw		3½ @ 7½c
" " in oil		10 @ 16 @ 18c
Vermillion, Chinese		90c
" English		40 @ 52½c
" Trieste		1.10c
" American, Common		15c
White Lead, American, pure dry		7½c
" " " in oil		7½ @ 8c
White, Paris, English, prime	in bbls.	2 @ 2½c
Yellow Ochre, French		$1.75
" " in oil asst'd cans, 11c; kegs, 8c		
" " Vermont in casks, 1½c		
Yellow Chrome		17 @ 27c
" " in oil		14 @ 19 @ 25c
Zinc White American No. 1, dry		5 @ 5½
" " No. 1, in oil		9c
" French (Paris) dry		8 @ 10c
" " in oil		10 @ 11c

Oils.

Linseed, Raw in casks and bbls	gal.	60 @ 61c
" Boiled "		63 @ 64c
Bleached Whale	₩ gal.	63c
Sperm	₩ gal.	$1.65
Elephant		68c
Signal		75c
Prime Lard		95c
No. 1 Extra		80c
West Virginia		14c @ 18c
Drilling		40c
Miners' Oil		42 to 45c
Fish Oil, pressed		40 @ 45c
Neatsfoot		80c
Tallow		6½ @ 7c
Machinery		40c
Engine		40c

Sundries.

Mineral Wool	per lb	1c
" extra		2c
Asphaltum Cuban		6c @ 8c
" Egyptian		8½ @ 9c
Benzine	₩ gal	9½ @ 11c
Chalk		½c
" Block		¾c
Dryer, Patent, Am'n	asst cans, 9c; keg, 7c	
Frostings		40c
Glue, White		24 @ 35c
" Sheet		20c
Glaziers' Points, Zinc		8c
Gum, Copal		36c
" Damar		25c
" Shellac, English		44c
" " dark		40c
Litharge, English		7½c
Pumice Stone, selected Lumps		4 @ 6c
" powdered		2½c
Pine Tar, bbls		$3.75
Putty, in bladders		3 c
" in bulk		2½c
Rosin—Common and Good—Strained		$2.25
E & F		$2.60 @ 2.60
G & H		2.60 @ 2.80
I & K		3.00 @ 3.25
M & N		3.75 @ 4.00
Spirits Turpentine		54c
Whiting Spanish		75c
Waste, No. 1 Cop		10c
" No. 1 White Machine		10c
" No. 2 "		9½c
" No. 1 Colored		7c
" No. 2 "		6½c
" Washed Machine		9c

Glass.

FRENCH WINDOW GLASS.
Prices current per box of 50 feet.

Single Thick.—Discount 50 & 10 & 5 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 6.50	$ 5.75	$ 5.50	$ 5.21
11 x 14 to 16 x 24	7.25	6.75	6.25	6.00
18 x 22 to 20 x 30	9.25	8.50	7.75	7.31
15 x 36 to 24 x 30	10.25	9.25	8.25	
26 x 28 to 24 x 36	11.00	10.00	9.00	
26 x 36 to 26 x 44	11.75	10.75	9.40	
26 x 46 to 30 x 50	15.25	12.50	10.50	
30 x 42 to 30 x 54	14.00	13.00	11.25	
30 x 56 to 34 x 54	15.00	13.75	12.40	
34 x 58 to 34 x 60	16.40	15.00	13.25	
36 x 60 to 40 x 60	17.50	16.00	14.00	

Double Thick.—Discount 50 & 10 & 5 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 8.25	$ 7.75	$ 7.50	$ 7.00
11 x 14 to 16 x 24	10.00	9.25	8.75	8.25
18 x 22 to 20 x 30	12.75	11.75	10.75	
15 x 36 to 24 x 30	14.25	13.00	11.75	
26 x 28 to 24 x 36	14.25	13.75	12.50	
26 x 36 to 26 x 44	16.25	14.75	13.00	
26 x 46 to 30 x 50	17.50	16.75	14.25	
30 x 42 to 30 x 54	18.50	17.25	14.75	
30 x 56 to 34 x 54	19.50	18.25	16.25	
34 x 58 to 34 x 60	20.50	19.50	18.00	
36 x 60 to 40 x 60	23.00	21.00	20.00	

An additional 10 per cent. will be charged for all Glass more than 40 inches wide. Any size over 52 inches in length, and not making more than 81 united inches will be charged in the 84 united inches bracket

EDWARD MILLER & CO.,

MERIDEN, CONN., Manufacturers of

Sheet Brass, Cast Brass, Brass Kettles, Machine Oilers, Lanterns,

KEROSENE LAMPS AND TRIMMINGS, TINMEN'S TRIMMINGS, &c.

Warehouse, - - 35 Warren Street, - - NEW YORK.

FRANCIS T. WITTE,

SUCCESSOR TO KING, BRIGGS & CO.,

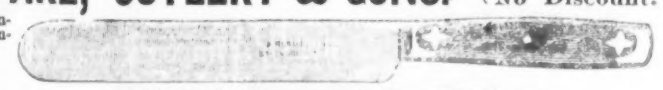
111 Chambers st., New York, HARDWARE, CUTLERY & GUNS.

Net Cash. No Discount.

Cash buyers are invited to send for illustrated net price list, in which are quoted the net prices, an arrangement which will be found convenient to the general merchant and hardware dealer, saving considerable trouble and uncertainty by avoiding the cumbrous system of confusing list prices subject to compound and oftentimes misleading discounts.

Especial attention given to POCKET AND TABLE CUTLERY.

Proprietor of "H. & J. W. KING'S" POCKET KNIVES RAZORS AND SHEARS.



Sold and Warranted for 25 Years.

AKRON IRON COMPANY,

AKRON, OHIO,

Sole Manufacturers of

Patent Hot Polished Shafting.

Medal of Superiority awarded at American Institute Fair of 1880.

This Shafting is superior to any in the market, and commends itself to the trade for the following reasons, viz:

1st. It is perfectly straight and round.
2d. It can be finished accurately to any desired gauge.
3d. It will not rust or tarnish easily.
4th. It will not warp or spring in key seating.
5th. Its surface is composed of magnetic oxide of iron, and consequently presents a journal or bearing surface that is unexcelled.
6th. The peculiarity of its manufacture is such as to entail loss in making it, if other than superior stock is used. Those purchasing it may therefore be assured of receiving first-class material.

Price lists, catalogues and references furnished on application.

Where parties desire it we cut keyways or splines any ength required, at a moderate charge.

AKRON IRON CO., Akron, Ohio.

AGENTS:

E. P. BULLARD, 14 Dey Street, N. Y.
S. E. BLISS, 89 Lake Street, Chicago, Ill.
D. N. BROWN MACHINERY CO., St. Louis, Mo.
J. H. KERRICK & CO., Indianapolis, Ind.
JOSHUA HENDY, San Francisco, Cal.

TRENTON LOCK & HARDWARE CO.,

TRENTON, N. J.

MANUFACTURERS OF

DOOR LOCKS AND HARDWARE,

BRONZED IRON AND BRONZE METAL DOOR TRIMMINGS, BUTTS AND HARDWARE.

CAST BUTTS,
DOOR BOLTS,
WELL WHEELS,
FLUSH BOLTS,
SHUTTER BOLTS,
PAD LOCKS,
BARN DOOR HANGERS, & RAIL,
GRINDSTONE FIXTURES,
SCREW & SIDE PULLEYS,
NOISELESS PULLEYS,
HAY FORK PULLEYS,
SHELF BRACKETS,

PHILADELPHIA SLIDING DOOR HANGERS AND RAIL.

Having largely increased our facilities and line of goods, we invite the attention of the Trade.

Illustated Catalogues Furnished on Application.

Agencies. James M. Vance & Co., No. 211 Market St., Philadelphia.
James Marshall, No. 48 Warren St., New York.

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

FACTORIES: New Britain, Connecticut.

WAREHOUSE: 79 Chambers St., New York.

Wilson Bohannan,

Manufacturer of Patent

BRASS PAD LOCKS

For Railroad Switches, Freight Cars, and the Hardware Trade. All sizes, with Brass and Steel Keys, with and without chains.

Patent Horizontal Rim Cylinder Night Latch.

Self-adjusting to doors of any thickness, with Patent Stop and Drawer Back Knob. RIGHT OR LEFT HAND.

PASSENGER CAR LOCKS, Bronzed, Nickel-Plated and Japanned.

☞ Catalogues and Samples sent on application. BROOKLYN, N. Y.

SABIN MFG. CO.,

MONTPELIER, VT., MANUFACTURERS OF

DOUBLE-ACTING SPRING BUTTS,

SABIN'S LEVER DOOR SPRINGS, For heavy doors,

BOSS AND CROWN SPRINGS, For light doors.

Send for Catalogue. Represented in New York by *DAVID HYMES & CO., 99 Church St.*

GUN POWDER.

Laflin & Rand Powder Co.

No. 29 Murray Street, New York,

Manufacture and sell the following celebrated brands of Sporting Powder known everywhere as

ORANGE LIGHTNING,
ORANGE DUCKING,
ORANGE RIFLE

more popular than any Powder now in use.

Blasting Powder and Electrical Blasting Apparatus.

Military Powder on hand and made to order.

SAFETY FUSE, FRICTIONAL & PLATINUM FUSES.

Pamphlets showing sizes of grain sent free.

Mineral Wool.

Patented May 31, 1870.

A fibrous material, encasing about 90 per cent. of its volume of air, and therefore a superior

NON-CONDUCTOR

OF

HEAT AND SOUND.

Being made from the slag of blast furnaces, it is fire-proof and durable in contact with heated surfaces. Readily applied.

Heaviest grade about 25 lbs. per cubic foot. Price, 1 cent per lb.

U. S. MINERAL WOOL CO.,

16 Cortlandt St., New York.

PATENT PORTABLE

Cylinder Boring Machine.

For boring all makes and sizes of steam and blast cylinders, pumps, Corliss valves, steam hammers and blowing engines, in their present position.

L. B. FLANDERS MACHINE WORKS,

1025 Hamilton Street,

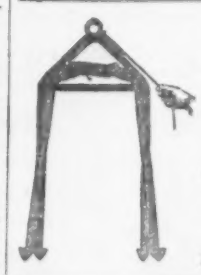
PHILADELPHIA, PA.

KEYSTONE RIVETING FORGE.

An Improved Pattern.
Cheap and Durable.
BEST IN THE MARKET.
Send for catalogue to

KEYSTONE PORTABLE FORGE CO.,

204 North 4th St., Philadelphia, Pa.



John Waldron,
Manufacturer of
Sprout's Double and Single Shear

Horse Hay Forks

And

Sprout's

HAY ELEVATORS, PULLEYS and GRAPPLES.

Send for Circulars.

Muncy, Lycoming Co., Pa.

STOVE REPAIRS.

Repairs for Stoves made at Troy, Albany, Rochester, Cleveland, Buffalo, Boston, St. Louis, Quincy, Chicago, Milwaukee and elsewhere, at

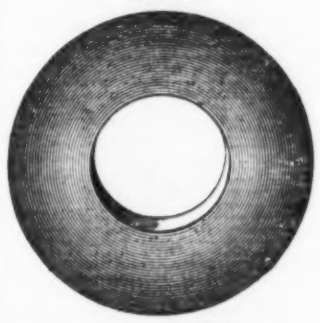
W. C. METZNER,
127 W. Randolph St., Chicago, Ill.

Providence Tool Co.,

PROVIDENCE, R. I.

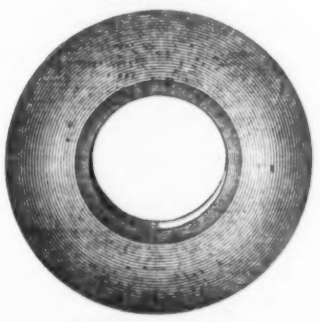
CLINCH RINGS.

No. 1.



Straight Hole.

No. 2.



Countersunk Hole.

Prices on Application.

HENRY B. NEWHALL, *105 Chambers St.,* NEW YORK AGENT.

J. H. WORK, *13 Pearl St.,* BOSTON AGENT.

S. H. & E. Y. MOORE, *163 & 165 Lake St.,* CHICAGO AGENT.

THE GENUINE STEBBINS

MOLASSES & OIL GATES,

MANUFACTURED ONLY BY

E. STEBBINS MFG. CO.

BRASS FOUNDERS AND FINISHERS.

Sole Manufacturers

Stebbins and Brightwood

COMPRESSION

AND

GROUND KEY WORK.

Send for circular and price list.

H. M. BREWSTER, Agent
Brightwood P. O., Mass

The Western trade can be supplied by

TREDWELL, COPPINS & CO., 130 Lake St., Chicago, Ill.

Office of NELSON LYON,

SOLE MANUFACTURER OF

Lyon's Patent Metallic Heel Stiffeners,

Also, Manufacturer of

BRUSHES

Of Every Description,

Nos. 17 & 19 Green St.,

Albany, N. Y., Dec. 8, 1880.

To All Whom it May Concern:

To-day a decree in my suit against G. T. Fisher & Co., of Detroit, for an infringement of my patent, was made and entered, of which the following is an extract:

At a session of the Circuit Court of the United States for the Eastern District of Michigan, held at Detroit, &c., on Wednesday, the 8th day of December, 1880. Present, Hon. H. B. Brown, District Judge.

NELSON LYON *against* GUYON T. FISHER, *et al.*

It is ordered, adjudged and decreed, that the act entitled "An act for the relief of Nelson Lyon and Jeremiah S. James," passed by Congress and approved April 1, 1880, &c., is a good, valid and constitutional act.

That the original patent, bearing date July 9, 1872, and numbered 128,845, granted and issued to Joseph Barsaloux, Jeremiah S. James and Nelson Lyon, when corrected by the Acting Commissioner of Patents, as directed by said act, was a good and valid patent.

That the said Joseph Barsaloux was the original and first inventor of the improvements in metallic stiffeners for boot and shoe heels mentioned and described in said letters patent.

That the Reissued Letters Patent No. 9198, dated May 11, 1880, granted to said Nelson Lyon for an improvement in metallic heel stiffeners for boots and shoes, originally patented as aforesaid, is a good and valid patent; that said Lyon is exclusively possessed of said Letters Patent and the invention thereby secured.

That the defendants, G. T. Fisher & Co., and each of them, have infringed upon the said patents and upon the exclusive rights of said Lyon under the same.

That said Lyon recover of said defendants all the profits, &c., they have made, and in addition thereto all the damage he has suffered by reason of the infringements by the defendants, and also the costs, charges and disbursements in the suit.

It is also further ordered, adjudged and decreed, that a perpetual injunction be issued against said defendants, according to the prayer of the said complainant's bill.

You are also hereby notified that the perpetual injunction has been issued and served on the defendants

All questions as to damages and settlements in relation to infringements under my patents must be addressed to and made with my attorney, WILLIAM H. KING, in my care at the above address.

NELSON LYON.

New York Wholesale Prices, September 28, 1881.

HARDWARE.

Anvils.
Eagle Anvils American ....℘ ℔ 10c dis 20 %
Wright's ....10½c @ 11c
Armitage's Mouse Hole ....9½ @ 9¾c
Trenton 10½c
Wilkinson's ....11 c

Anvil, Vise and Drill.
Millers Falls Co., $28.00 ....dis 25 %

Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mfg. Co. / C. E. Jennings & Co. / Humphreysville Mfg. Co. / Ives / Beecher (French, Swift & Co) / Griswold / Nobles Mfg. Co. / Kasson's Patent } dis 40 % from list of Jan 7, 1880
Cook's, Douglass Mfg. Co ....dis 40&10 %
Snell Mfg. Co.'s C. S. Augers ....dis 40 %
" " B. Machine ....dis 40 %
" " C. S Bits ....dis 40 %
" " Jenning's Bits ....dis 35 %
Patent Solid Head ....dis 30 %
Lewis' Patent Single Twist ....dis 40 %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand-Rail Bits ....dis 10&10&10 %
Russell Jennings' Augers ....dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers dis [illegible]&10&10&10 %
Imitation Jenning's Bits ....dis 40@45 %
Ives' "Jennings" Bits ....dis 33⅓&10 %
Andrews Bits ....dis 40 %
Expansive Bits, Clark's, small, $18; l'ge. $26 ....dis 25 %
" " Ives ....$20 @ $30—dis 33⅓ %
" " Blake's ....$20—dis 40 %
" " Parmelee's ....$20 and $30 .dis 33⅓ %
Hollow Augers Ives' / French, Swift & Co } dis 15&10 %
" " Douglas ....dis 15&10 %
" " Bonney's Adjust ....℘ doz $48—dis 25&10 %
Stearns' Adjust ..℘ doz $48—dis 20&10 %
Ives' Expansive, each $4.50—dis 30&10 %
Universal Expansive, ea $4.50—dis 20 %
Woods ....dis 25 %
Gimlet Bits ....$7.50 ℘ gross, dis 45 %
" Diamond ....℘ doz $1.10 dis 20&10 %
" "Bee" ....dis 35&5 %
Double Cut Gimlet Bits, Shepardson's ....dis 40 %
" " Ct. Valley Mfg. Co ...dis 30&10 %
" " Hartwell's ....dis 60&10 %
" " Douglass' ....dis 40 %
" " Ives' ....dis 40 %
Morse's Bit Stock Drill ....dis 25 %
L'Hommedieu's Ship Augers ....dis 15 %
Watrous Ship Augers ....dis 15 %
" Extension Lip ....dis 30 %

Awl Hafts.
Sewing Brass Ferrule ....$3.50 ℘ gross—dis 40&10 %
" " ....3.50 " dis 40&10 %
Patent Sewing, Short ....$1.00 ℘ doz—dis 40&10 %
" " Long ....$1.40 ℘ doz—dis 10 %
Patent Peg Plain Top ....$10.00 ℘ gross—dis 40&10 %
" " Leather Top ....12.00 " dis 40&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common ....℘ gross $1.70—dis 25&10 %
Shouldered Peg ....℘ gross 2.45—dis 25&10 %
Patent Peg ....℘ gross .63—dis 25&10 %
Shouldered Brad ....℘ gross $2.70—dis 25&10 %
Handled Brad ....$7.00 ℘ gross—dis 25&10 %
Handled Scratch ....$7.00 ℘ gross—dis 25&10 %
" Socket Scratch ....$1.00@$1.25 ℘ doz—net
Brad Sets, Aiken's ....℘ doz $17.00—dis 45&10 %
" No. 42, $10.50; No. 43, $12.50 ....dis 70 %
" Stanley's Excelsior, No. 1, $9.00 ...dis 30&10 %
" " " No. 2, 4.80 ...dis 30&10 %
" " " No. 3, 7.80 ...dis 30&10 %

Axes.
Single Bit, 4½ to 5¼ and under ....℘ doz $10.00 net
4½ to 6 and over ....℘ doz $10.50 net
Beveled ....50 c ℘ doz advance
Double Bit, 4½ to 5¼ and under ....℘ doz $19.00 net
4½ to 6 and over ....℘ doz $20.00 net
Beveled ....$1.00 ℘ doz advance

Axle Grease.—Frazer's ....℘ ℔ 6c

Bag Holders.
Sprengle's Patent, per doz. $18 ....dis 40 %

Balances.
All Spring Balance ....dis 15&10 %

Bells.
Hand, Light Brass ....dis 65&10 %
" Extra Heavy ....dis 45 %
" White Metal ....dis 60 %
" Silver Chime ....dis 20&10 %
" Globe (Cone's Patent) ....dis 25&10 %
Gong, Abbe's ....dis 20&10 %
" Yankee ....dis 30&10 %
" Barton's ....dis 30&10 %
Crank Taylor's ....dis 25&10 %
" Brook's ....dis 50&10&2 %
" Cone's ....dis 10 %
" Connel's ....dis 35 %
Lever, Sargent's ....dis 55&10 %
" Taylor's Bronze or Plated Lever ....net
" " Japanned Lever ....dis 25&10 %
" R. & E. M. Co.'s ....dis 50&10&2 %
Pull, Brook's ....dis 50&10&2 %
" Western ....dis 25&10 %
Call ....dis 25 %
Cow, Common Wrought ....dis 55 & 10 %
" Western ....dis 20&10 %
" Sargent's new list ....dis 55&10 %
Kentucky "Star" ....dis 20&10 %
" Sargent's new list ....dis 50&10 %
Dodge's Genuine Kentucky, new list—
Os. 0 1 1½ 2 3 4 5 6 Hog
$12.00 10.00 9.00 8.00 6.00 5.00 3.50 2.50 5.00 } dis 50 %
Texas "Star" ....dis 40 %

Bellows.
Blacksmiths', Common ....dis 45 %
Extra and Pittsburgh Pattern ....dis 20 %
Moulders ....dis 25 %
Hand Bellows ....dis 25 %

Belting, Rubber.
N. Y Belting and Packing Co ....dis 20@50 %

Bit Holders.
Extension, Barber's ....℘ doz $15.00—dis 40&5 %
" Ives' ....℘ doz $15.00—dis 40 %
Diagonal ....℘ doz $24.00—dis 40 %
Angular ....℘ doz $24.00—dis 40&5 %

Blind Adjusters.—Domestic ....℘ doz $2.00, dis 15 %
Excelsior ....℘ doz $10.00.—dis 50&10&2 %

Blind Fasteners.
Mackrell's ....per doz. pairs, $1.00, dis 10%
Van Sand's ...Screw pattern, per gro. $10.00 ...dis 35 %
" old pattern ....℘ gross, $8.50 net
Washburn's Patent ....℘ gross $10.50 net
Merriman's ....new list net
Mackrell's ....℘ doz. pairs, $0.65, dis. 10 %

Blind Staples.
Barbed, ½ in. and larger ....℘ ℔ 11c net
" ⅜ in ....℘ ℔ 13c net

Blocks.
Differential Pulley Blocks ....dis 20 %
Penfield Block Co., Rope and Iron Strap'd ....dis 40 %
" " " Wrot. Iron Com. bushed. dis 25 %
" " " " " all steel roll'r. dis 10 %
" " " Sheaves " " dis 35 %
Stanley R. & L. Co., Rope and Iron Strap'd ...dis 40&10 %

Bolts.
Cast Iron Barrel, Shutter, &c ....dis 50&10 %
Cast Iron Chain (Sargent's list) ....dis 60&10 %
Ives' Pat. Door Bolts ....dis 50 %
Wrought Barrel ....dis 60&10 %
" Square ....dis 60&10 %
" Shutter, all Iron, Stanley's list ....dis 50&10 %
" " Brass Knob. " " ....dis 20&10 %
" " Sargent's list ....dis 60&10 %
" Sunk Flush, Sargent's ....dis 75&10 %
" " Stanley's ....dis 40&7½ %
" B. K. Flush, Com'n. Stanley's ....dis 50&5 %
" " Ex. Heavy. " ....dis 40&10 %
" Plated Knob & Slide Flush " ..dis 50&2½ %
Carriage and Tire, Common ....dis 80 %
" " Philadelphia, new list ....dis 67&5 %
" " Philada. Pattern ....dis 70&5 %
" " Shelton's ....(old list) dis 60&10 %
Union Carriage ....dis 70 %
R. B. & W. Carriage (old list) ....dis 65 %
Tire, Am. Screw Co.'s, Phila, new list, Nov 1, '79, dis 75 %
" "Bay State" ....dis 80&10 %
" R. B. & W., new list ....dis 70&10 %
Stove—American Screw Co.'s ....dis 40 %
" R. B. & W ....dis 40
R. & E. Mfg. Co ....dis 40 %
Plow ....dis 50 %
" R. B. & W ....dis 40 %
Machine ....dis 60 %
Bolt Ends ....dis 60 %

Borax ....15c ℘ ℔ net

Boring Machines. Upright. Angular.
First quality, no Augers ....$5.50 $6.75 ....dis 40 %
Phillips' with Augers ....50 .90 net

Boxes.
Interchangeable Shelf Boxes ....dis 20 %

Braces.
U. S. Backus ....dis 50 %
Wilson Mfg. Co ....dis 10 %
Barber's ....dis 40&5 %
Spofford's Patent ....dis 50&5 %
Noble's Patent ....dis 40&5 %
Ives' Patent Braces ....dis 50&10 %
Common Ball (American) ....dis 50&5 %
Amidon's ....dis 50 %
Barker's Impd ....dis 40 %
Empire ....dis 30 %
Buffalo Ball ....dis 40 %

Brackets.—Shelf (Sargent's) plain ....dis 55&10 %
" " fancy ....dis 60&10 %
Reading ....dis 60&10 %

Bright Wire Goods list of Dec. 15, '79. dis 60&10 %

Bull Rings.—Union Nut Co ....dis 50&20
Sargent's ....dis 66⅔&10 %
Hotchkiss' ....low list dis 35%
Humason, Beckley & Co.'s ....dis [illegible]

Butts
Wrought Brass ....dis 75&5 %
Cast Brass, Tiebout's ....dis 30 %
" Corbin's ....dis 20&10 %
Fast Joint, Narrow ....dis 40&10 %
" Broad ....dis 40&10 %
Loose Joint ....dis 50&10 %
" Japanned ....dis 50&10 %
" with Acorn ....dis 50&10 %
" Japanned, with acorns ....dis 50&10 %
Parliament Butts ....dis 55&10 %
Mayer's Hinges ....dis 50&10 %
Loose Pin, no Acorn ....dis 50&10 %
" Acorns ....dis 50&10 %
" " Japanned ....dis 55&10 %
" " " Plated Tips ....dis 55&10 %

WROUGHT IRON.
Fast Joint Narrow ....dis 50&10 %
" Lt. Narrow ....dis 50&10 %
" Broad ....dis 50&10 %
Loose Joint, Broad ....dis 55&10 %
Table Butts, Back Flaps, &c ....dis 50&10 %
Inside Blind, Regular ....dis 50&10 %
" " Light ....dis 50&10 %
Loose Pin, Wrt ....dis 55&10 %
" " " Light ....dis 50&10 %

Spring Hinges.
American Spiral Spring Butt Co., Jap'd ....dis 25 %
" " " " Fancy ....dis 20 %
Gem Spiral Spring Butts, Japanned ....dis 25 %
" " " " Ornamental ....dis 20 %
Geer's Spring and Blank Butts ....dis 25 %
Sabin Mfg. Co.'s Double Acting ....dis 35 %
Union Spiral Spring, Japanned ....dis 25 %
" " Ornamental ....dis 20 %
Union Spring Hinge Co.'s ....dis 25 %
American Spring Hinge Co.'s ....dis 25 %
Union Mfg. Co ....dis 25 %
Bommer's ....dis 25 %
Buckman's ....dis 25 %
Blind Butts, Parker ....dis 70 %
" Palmer ....dis 45&10 %
" Seymour ....dis 70 %
" Shepard's "Double Locking" Nos. 1 & 2 ....dis 70 %
Shepard's "Noiseless," Nos. 50 & 60 ....dis ....70 %
" Lull & Porter ....dis 70&10 %
" Nicholson ....dis 45&10 %
" Huffer ....dis 50 %
" Clark's, Nos. 1, 3, 5, 40, 45 and 50 ....dis 70 %
" Sargent's No. 1, 3 ....dis 70 %
" " No. 12 ....dis 70&10 %
" Reading's Gravity ....dis 70&5&10 %
Clark's Improved Seutter Hinge ....dis 70 %

Bow Pins.
Hotchkiss' ....low list net
Humason, Beckley & Co.'s ....dis 60 %
Sargent & Co's ....$19.70 and $21.40, dis 60&10&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co ....dis 20
Bradley's ....dis 25
Beatty's ....dis 25&5 %
1 2 3 4 5 6 7 8
$16.50 19.00 21.50 24.00 27.00 30.00 33.50 36.10

Can Openers.
Messenger's Comet ....℘ doz $3.00, dis 25 %
American ....℘ gross $7.50, dis 10 %
Duplex ....℘ doz 25c, dis 15@20 %
Lyman's ....℘ doz $3.75, dis 20 %
No 4, French ....℘ doz $2.25, dis 55 %
No. 5, Iron Handle ....℘ gross $7.50 dis 10 %
Eureka ....℘ doz $2.50, dis 10 %
Sardine Scissors ....℘ doz $7.00, dis 55 %
Star ....℘ doz $5.00, dis 20&25 %
Sprague ....dis 75@10 %
"Worlds Best" per gross, No. 1, $12; No. 2, $24; No. 3, $36 ....dis 50 %

Caps—Percussion, ℘ 1000.
U. M. C., F. C. trimmed ....50c / " F. L. ground ....70c } dis 10&10
U. M. C. Cen. fire ground ....70c / " Double W. proof ....$1.40 } dis 10&5 %
G. D. & S. B ....35c, dis 5 %
Double Waterproof, in 1 10's ....$1.40 / Colt's Pistol ....70c } dis 10&5 %
F. L ....50c / E. B. 1-10, Trimmed ....65c / E. B. 1-10 Ground Edge ....70c } dis 10& 5 %
Musket, in 1-10's ....75c net

Cartridges.—Rim ....dis 70&10 %
Central Fire ....dis 20&10 %

Cards.—Horse and Curry, new list, July, '81, dis 10 %
Cotton ....dis 10 %
Wool ....dis 10 %

Carpet Stretchers.
Cast Steel, Polished ....℘ doz $5.00, dis 30 %
" Iron Steel Points ....℘ doz $2.00, dis 45 %
Bullard's ....dis 25 %

Casters.
Bed ....dis 40&5 %
Plate and Shallow Socket ....dis 40&5 %
Deep Socket ....dis 25&10 %

Cattle Leaders.
Humason, Beckley & Co.'s ....dis 65&10 %
Sargent's ....dis 66⅔&10 %

Chain.
Trace, 6½-1-2 ....℘ pair 79c / " 6¼-10-3 ....℘ pair 70c / " 7-10-2 ....℘ pair 86c } dis 40 %
German Halter Chain ....dis 50&10 %
" Coil ....dis 50&10 %
Covert Halter, Hitching and Breast ....dis 35%
Oneida Halter Chain (old list) ....dis 40 %
Galvanized Pump Chain ....℘ ℔ 9½c net
Jack Chain, Iron ....dis 60&10 %
" Brass ....dis 50&10 %

Chalk.
White ....℘ gross 60c net
Red ....℘ gross 80c net
Blue ....℘ gross 100c net
White Crayons ....℘ gross 10c net

Chisels.
Socket Framing, Crossman ....dis 65&5 %
" " Arlington Edge Tool Co ...dis 65&10 %
" " Buck Bros ....new list, dis 22½ %
" " Merrill ....dis 65&10 %
" " Witherby Tool Co ....dis 65&10 %
" " Douglass' ....dis 65&10 %
" Firmers, Crossman ....dis 65&5 %
" " Arlington Edge Tool Co ...dis 65&10 %
" " Buck Bros ....new list, dis 22½ %
" " Merrill ....dis 65&10 %
" " Witherby Tool Co ....dis 65&10 %
" " Douglass' ....dis 65&10 %
" Corner ....dis 65&10 %
Tanged Firmers extra ....dis 40 %
" " Butcher's ....$5.00 @ 5.25 to £
" " Spear & Jackson's ....5.00 to £
" " Buck Bros. (Shank) ....5.25 to £

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron ....dis 25 %
" Adjustable, Gray's ....dis 20 %
" " Lambert's ....dis 20 %
" " Snow's ....dis 40&5 %
" " Hammer's ....dis 15 %
" " Stearns' ....dis 20&10 %
" Cabinet, Sargent's ....dis 70&10 %
" Carriage Makers', Sargent's ....dis 65&10 %
" Cord and Tape (T. & S. Mfg. Co.) ....dis 30 %

Clips, Axle.
Norway or Best ....dis 40&5 %
Superior ....dis 65&5 %

Coal Hods.
Griffiths ....dis 33⅓ %

Cockeyes ....dis 35&10 %

Cocks, Brass.
Racking ....new list, July 10, '80 / Globe " " / Plain Bibbs " " / Ale and Beer " " } dis 40 %

Coffee Mills.
Board and Box ....dis 45 %
Wilson's ....dis 35&10&5 %
Selsor's Pat ....$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.) ....dis 30 %
French Steel ....dis 25 %
The "Swift" (Lane Bros.) ....dis. 30 %

Combined Dinner Pail and Lantern.
Per doz $11.00 ....dis 30 %

Compasses, Dividers, &c.
Compasses ....dis 55 %
Callipers ....dis 55 %
Dividers ....dis 55 %
Bemis & Call Co.'s Dividers ....dis 60&5 %
" " Compasses & Callipers ....dis 50&5 %
" " Wing & Inside or Outside. dis 50&5 %
" " Double ....dis 60 %
" " Call's Pat. Inside ....dis 30 %
Excelsior ....dis 50 %
Miller's Patent ....dis 25 %

Coopers' Tools.
Bradley's ....dis 15 @ 20 %

Corkscrews.—Humason & B ....dis 33⅓ %
Clough's Wire ....dis 25 %

Corn Knives and Cutters.—Bradley's ..dis 10 %
Wadsworth's ....dis 33⅓ %

Crow Bars.
Cast Steel ....℘ ℔ 8½c
Iron, Steel Points ....℘ ℔ 6½c

Curling Irons, &c.
⅛, ⅝, ¾ in., $1.80 2.00, 2.40 ....dis 10 %
Curling Tongs ....℘ doz $3.65, dis 10 %
Pinching Irons ....℘ doz 7.50, dis 20 %

Curry Combs.
Fitch's new list ....dis 50 %
Hotchkiss Novelty ....new list, July, 1880, dis 25 %
" Exclr. Supr. Champion ....dis 25 %
Lawence "Perfect" ....dis 25&10 %
Rubber ....℘ doz $10.00, dis 15 %

Curtain Pins.—Silvered Glass ....net
White Enamel ....net

Cutlery
Meriden Cutlery Co. (Table) ....net
Am. Miller Bro.'s Cutlery Co ....dis 25 %
Humason & Beckley, Pocket ....dis 33⅓ %
Naugatuck Cutlery Co ....list net
Aaron Burkinshaw's Pocket ....dis 25 %

Dog Collars.
Embossed Gilt ....dis 20 %
Leather ....dis 40 %
Brass ....dis 40 %
Celluloid ....dis 40 %

Door Springs.
Torrey's Rod ....℘ doz $2.10, dis 10 %
Gray's " ....℘ doz $1.70, net
Bee Rod ....℘ doz $1.70, net
Warner's ....dis 15&10 %
Gem (Coil)—
No. 1, Large, Japanned ....℘ doz $4.00 / No. 2, Medium, " ....℘ doz 2.75 / No. 3, Small. " ....℘ doz 2.00 } dis 25&10 %
Star (Coil)—For Cop'd, Nickel-Plated, &c. see list.
No. 4, ("Snoo Fly") Screen door size ℘ doz $1.50 / No. 5, Screen Door Size ....℘ doz $2.00 / No. 6, Medium ....℘ doz 2.75 / No. 7, Large ....℘ doz 4.00 } dis 30&10 %
Sabin's Lever..No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss ....No. 1, $5.40; 2, $4.20; 3, $3.00. dis 50 %
Sabin's Crown ....℘ doz $2.75, dis 50 %
Philadelphia ....5 in., $5.00; 8 in., $7.75 dis 35 %
Barker's Concealed ....dis 20 %
Cowell's ....No. 1, $18.00; No. 2, $15.00 ℘ doz, dis 50 %
Rubber, complete ....℘ doz $1.80, dis 10 %
Hercules ....dis 40 %

Drawing Knives.
Arlington Edge Tool Co ....dis 65&10 %
Crossman's No. 1 ....dis 65&5 %
Merrill ....dis 65&10 %
Nobles Mfg. Co ....dis 15 %
Bradley's ....dis 35 %
Adjustable Handle ....dis 20 %
Witherby Tool Co ....dis 65&10 %
Douglass ....dis 65&10 %

Drills and Drill Stocks.
Blacksmiths' ....each $2.50 dis 10 %
Blacksmiths Self Feed'ng ....each $7.50, dis 30 %
Breast P. S & W ....dis 20&10 %
" Hotchkiss ....dis 20 %
Breast, Wilson's ....dis 20 %
" Miller's Falls ....each $3.00, dis 25 %
" Bartholomew's ....each, $2.50 dis 25&10 %
Ratchet, Merrill's ....dis 10 %
" Ingersoll's ....dis 25 %
" Whitney's ....dis 20 %
" Weston's ....dis 20 %
" Moore's Triple Action ....dis 20 @ 25 %
Whitney's Hand Drill ....dis 50 %
Wilson's Drill Stocks ....dis 10 %
Automatic Boring Tools ....each $2.25, dis 20 %

Drill Chucks.—Morse's Beach Patent ....dis 30 %
" Adjust..each $10.00, dis 30 %
Danbury ....$8.00, dis 30 %

Egg Beaters.
Dover ....℘ doz. $2.50 dis 2 %
Acme ....$20 per gross, dis 33⅓&10 %
Standard ....$24 per gross, dis 33⅓ %
National ....℘ doz $4.50, dis 33⅓ %
Family ....per gross $15; per doz., $1.50 net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved) ℘ 100 $15.00 @ $54.00, dis. 10 %
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved) ℘ doz $5.60 @ $10.20 dis. 10 %
Storehouse, Duc's Pat.) 12 to 17, $12.00 @ $20.00. dis. 10 %

Emery and Emery Paper.
Regular numbers ....℘ ℔ 6c
Flour and F F ....℘ ℔ 4c
B. & A. Emery Paper ....dis 25@30 %
Sibley's Emery and Crocus Cloth
Large size, $16; Medium, $10.50 per ream; dis 15 %

Enameled and Tinned Ware.
Kettles ....dis 45 %
Sauce Pans ....dis 30 %
Tinned Sauce Pans ....dis 30 %

Escutcheon Pins.
Brass ....dis 50 %

Escutcheons.
Door Lock ....Same discounts as Door Locks
Brass Thread ....dis 55 %
Wood ....dis 25 %

Faucets.
Fenn's ....dis 40 %
Bohren's Pat. Rubber Ball ....dis 25 %
Fenn's Cork Stops ....dis 43⅓ %
Lane's (Self Measuring) ....℘ doz., $36.00, dis. 25 %
Star ....dis 55&10 %
Frary's Patent Petroleum ....dis 20&10 %
Wood and Metallic ....dis 40 %
West's Patent Key ....dis 45 %
Metallic Key, Leather Lined ....dis 50 %
Cork Lined ....dis 70 %
Enterprise (Self Measuring) ....℘ doz, $36.00, dis 30 %
J. Sommer's Best Metallic Key ....dis 40 %
J. Sommer's Cork-lined, 1st quality ....dis 50 %

Felloe Plates ....℘ ℔ 100, dis 20 %

Files.
Auburn ....$5.00 to £, dis 35 %
E. M. Boynton's ....new list, dis 25 %
J. & Riley Carr ....4.50 to £
J. & Riley Carr, Horse Rasps ....$4.75 to £
Johnson & Bro ....dis 30 %
Butcher's ....4.50 to £
Walter Spencer & Co.'s "Diamond" ....4.50 to £
Fisher's ....4.75 to £
Moss & Gamble ....4.50 to £
H. Disston & Sons (new list) ....dis 40 %
Heller Bros.' Horse Rasps ....dis 30 %
Nicholson ....dis 40 %
New American ....dis 40 %
Union File Co ....dis 40 %

Fluting Machines.
Knox, 4½-inch Rolls ....$3.50 each / " 6 " " ....4.00 " } dis 25 %
Peerless, 4-inch Rolls ....4.00 each net
" 5 " " ....4.75 each net
Eagle, 3½-inch Roll ....$2.15, dis 25 %
" 5½ " " ....$2.85, dis 25 %
Eureka, No. 1, 7-inch Roll ....6.00 each, dis 10 %
" No. 2 5-inch Roll ....4.00 each, dis 10 %
Crown..4½-in. $3.50; 6-in., $4.00; 8-in. $6.50 each dis 25 %
Star ....4½ in., $4.00; 6 in., $5.00 each dis 10 %
Crown Jewel ....6 in., $3.40 each. dis 25 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 25 %
Domestic Fluter ....1.50 each net
Geneva Hand Fluter, White Metal..℘ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $14.00; 2, $12.50; 3, $10.00 ℘ doz ....dis 33⅓ %
Shepard Hand Fluter ....No. 85 ℘ doz $10
" " " No. 95, $6.00; No. 110, $7.00;
" " " No. 70, $12.00; No. 65, $8.00 ....net
Clark's Hand Fluter ....℘ doz $15.00, dis 33⅓ %
Combined Fluter and Sad Iron ....℘ doz 15.00, dis 30 %
Buffalo ....℘ doz 10.00, dis 10 %

Fluting Scissors ....dis 45 %

Fly Traps.
Paragon ....per doz, $3; net

Forks.
Hay, Manure and Spading ....dis 50 %
Plated" A 1, Rogers & Bro ....dis 40&5&5 %
" Reed & Barton ....dis 40&5&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co ....dis 30 %
American ....dis 20 %

Fry Pans.
Burnished, list as follows ....dis 60&10 %
No 0 1 2 3 4 5 6 7 8
℘ doz $3.00 $3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
"Acme" ....dis 40&10 %

Gauges.
Marking, Stanley's ....dis 50&10 %
" Chapin's ....dis 50&10 %
Wire ....dis 10&10 %
" Disston's ....dis 20 %

Gimlets.
Nail and Spike ....dis 45 %
"Bee" Gimlets ....℘ gross $12.00 dis
"Eureka Gimlets ....dis 50 %
"Diamond Gimlets ....dis 40 %
Double Cut, Shepardson's ....dis 40 %
" " Hartwell's ....dis 50 %
" " Ives' ....dis 50 %
" " Douglass' ....dis 40%

Glue Pots.
Tinned and Enameled ....dis 20&10 %
Family, Howe's "Eureka" ....dis 25 %
" L. F. & C.'s "Handy ....dis 25 %

Grindstone Fixtures.
Sargent's Patent ....dis 70&10&10 %
Reading Hardware Co., new list ....dis 30&10 %

Gun Wads.
U. M. C. B. E. 11 up ....$2.00 / " " 9 & 10 ....2.30 / " " 7 & 8 ....2.00 / " P. E. 11 up ....3.10 / " " 9 & 11 ....4.00 / " " 7 & ....4.90 } dis 5&5 %

Halters.
Covert's Pat. Rope ....dis 50%
Horse and Cattle Ties, Covert's ....dis 50%

Hammers.
Maydole's ....dis 15 %
Cheney's ....dis 25 %
Hartford Hammer Co. (new list July 1, '81) ....dis 20 %
Humason & Beckley ....dis 50 %
Verree ....dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75 dis 25&10 %
Warner & Noble's ....dis 10 %
Kip's ....dis 20 %
Yerkes & Plumb ....dis 15 %
Wilkinson's Smiths' ....15½c ℘ ℔ net

Hand Cuffs and Leg Irons.
Providence Tool Co. Hand Cuffs, $15.00 ℘ doz / " " Leg Irons, $25 ℘ doz } dis 10 %
Tower's ....dis 25 %

Handles.—Door or Thumb Latches—
Nos. 0 1 2 3 4
Per doz ....$0.80 1.00 1.18 1.35 1.50 ....dis 60&10 %
Roggin's Latches ....per doz 35c@40c net
Bronzed Iron Drop Latches ..℘ doz $0.75 @ 0.85 dis 10 %
Jap'd Store Door Handles—Nuts, $1.62; Plate $1.08 no Plate, $0.87 ....dis 10 %
Barn Door ....per doz $1.40, dis 10 %
Wrought Chest ....dis 65&10 %
Surface Chest ....dis 55&10 %
Flush Chest ....dis 60&10&10 %
Lifting ....dis 55&10 %
Saw and Plane ....dis 40&10 %
Boynton's Pat. Loop Saw Handles ....dis 25 %
" " Centennial Saw Handles ....dis 25 %
Hammer and Hatchet ....dis 20 %
Brad Awl ....℘ gross $2.00, dis 20&10 %
Hickory Firmer Chisel, assorted, ℘ gross $4.50
" " " large, " 5.00
Apple " " assorted, " 5.00
" " " large, " 6.00
Socket " " assorted, " 3.00
" Framing " assorted, " 5.00 } dis 20&10 @ 25@10 %
File, assorted, ℘ gross 2.75
Auger, assorted, ℘ gross 5.00
" large, " 7.00
Patent Auger, Ives' ....dis 25
" Douglass' ....℘ set $1.25, net
" Swan's ....℘ set $1, net

Hangers.
Barn Door, old patterns ....dis 60&10 %
" New England ....dis 60&10 %
Challenge ....dis 50 %
Climax (Anti-Friction) ....dis 50 %
Sterling Improved (Anti-Friction) ....dis 65&10 %
Cheritree ....dis 50&10 %
Kidder's ....dis 50&10 %
U. S ....4 in., $12; 5 in., $15; dis 60 %
The "Boss" ....dis. 50&10 %

Harness Snaps.
Henshaw's ...List of 1⅛ changed to 14.00, dis 55 & 10 %
Judd's ....14.00, dis 55 & 10 %
Fitch's (Bristol) ....14.00, dis 55 @ 10 %
Hotchkiss' ....dis 10 %
Andrews' ....dis 50 %
Sargent's ....dis 65&10 %
"German ....dis 75 %
Covert ....dis 40&10 %
Covered Spring ....dis 45&10 %

Hatchets.
Isaiah Blood ....dis 15 %
Shingling, Nos. 1 2 3 ....℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ....℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ....℘ doz 7.50 8.00 8.50
Hunt's ....dis 20&10 %
Shingling, Nos. 1 2 3 ....℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ....℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ....℘ doz 7.50 8.25 9.00
Hurd's ....dis 35 @ 40
Shingling, Nos. 2 3 ....℘ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ....℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ....℘ doz 8.00 .50 9.00
Yerkes & Plumb ....dis 30
Shingling, Nos. 1 2 3 ....℘ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3 ....℘ doz 8.25 8.75 9.25
Lathing Nos. ....℘ doz 7.50 8.00 8.50
Simmon's ....dis 20
Shingling, Nos. 0 1 2 3 ....℘ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ....℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ....℘ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4 ....℘ doz 9.00 10.00 12.00 14.00
" Nos. 5 6 7 8 ....℘ doz 16.00 18.00 20.00 22.00
Collins ....dis 10 %
Shingling, Nos. 1 2 3 ....℘ doz $6.00 $6.50 $7.00
Claw Nos. 1 2 3 ....℘ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3 ....℘ doz 6.00 6.50 7.00

Hay Knives.
"Lightning" ....℘ doz $20.00 net
Wadsworth's ....dis 33⅓

Hinges.
Gate, Western ....℘ doz $6.25, dis 60&10 %
" N. E ....℘ doz $10.10, dis 60&10 %
" N. E. Reversible ....℘ doz $6.50, dis 60&10 %
Gate, Clark's Nos. 1, 2, 3 ....dis 50&10 %
" N. Y. State ....℘ doz $9.50, dis 60&10 %
" Automatic ....℘ doz $12.50 dis 40 %
" Common Sense ....dis 20&10 %
" Seymour's ....dis 50&10 %
" Shepard's ....Nos. 10, 20 & 25, dis 60 %
Rolled Blind Hinges ....dis 60&10 %
Rolled Plate ....dis 60&10 %
Rolled Raised ....dis 60&10 %
Plate Hinges / "Providence" { 8, 10 & 12 in. $6.33 ℘ 100 ℔ / over 12 in. $5.00 ℘ 100 ℔ } ....dis 10 %
Screw Hook and Strap { 8, 10, 12 in., $6.60 ℘ 100 ℔ / 14 to 36 in. $5.25 ℘ 100 ℔ } dis 10 %
Heavy Welded Hook { 8 to 12 in., $6.60 ℘ 100 ℔ / 14 in. & up, 5.25 ℘ 100 ℔ } dis 10 %
Screw Hook and Eye ....{ ¾ & 1 in., 9c / ⅝ in. 9c / ½ in. 10c / ⅜ in. 19c } dis 20 %
Wrought Strap and T, list Dec. 20, '77 ....dis 50&10&10 %

Hoes.—Riveted Shank ....per doz, $5.00; dis 35 %
Socket ....℘ doz $5.25, dis 35 %
Grub ....dis 15 %
Planters' ....dis 35 %
Scovill Pattern ....dis 20&10 %
Scovill Pattern, Bandied ....dis 25 %
Hick's Pat. Solid C. S. Planters' ....dis 20&10 @ 30 %
" " " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters ....dis 25 %
" " Scovill Pattern ....dis 20@25 %
Magic ....per doz, $5; net

Hooks.
Bird Cage, Sargent's list ....dis 60&10 %
" Reading ....dis 40&10 %
Cotton ....per doz. $4, dis 50 %
Cotton, Patented (N. Y. Mallet & Handle Wks), dis 35%
Cotton (Humason & Beckley Mfg. Co.) ....dis 40 %
Belt ....dis 60&10 %
Bench—Hotchkiss', $5.00 ℘ doz ....dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ℘ doz dis 25 %
" McGill's, $3.00 ℘ doz ....dis 25 %
Clothes Line Sargent's list ....dis 65&10 %
" " Reading list ....dis 40&10 %
Ceiling.. { Sargent's list ....dis 60&10 %
Harness. { Reading list ....dis 40&10 %
Coat and Hat, Sargent's list ....dis 60&10 %
" " Reading ....dis 40&10&10 %
Picture Hooks, Brown's Pat. Solid Brass, $4 per gross ....dis 25 %
Tassel (T. & S. Mfg. Co.) ....dis 40 %
Wrought Staples and Hooks and Staples ....dis 70%
" Staples, Stanley's list ....dis 65&10 %
Wire Screw Hooks and Eyes ....dis 60&10 %
Grass and Bush ....dis 40@45 %
Whiffletree—Patent ....dis 40 %
Hooks and Eyes—Malleable Iron ....dis 65&10 %
" " Brass ....dis 65&10 %

Horse Nails

	Nos. 5	6	7	8	9	10	
Ausable, ℘ ℔	31c	28c	26c	25c	24c	23c	dis 30 %
Clinton, "		23c	21c	20c	19c	18c	dis 20 %
Essex, "	31c	28c	26c	25c	24c	23c	dis 30 %
Putnam, "	31c	28c	26c	25c	24c	23c	dis 10&10 %
National, "	25c	23c	21c	20c	19c	18c	dis 20&10 %
Vulcan, "	28c	25c	23c	22c	21c	20c	dis 10 %
Globe, "	28c	25c	23c	22c	21c	20c	dis 10 %
A. C., "	27c	25c	23c	22c	21c	21c	dis 20 %
Ch'mpl'in Forged "	28c	25c	23c	22c	21c	20c	dis 10 %

Horse Shoes.—Burden ....℘ keg $4.37
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy ....℘ keg 4.37½
Mule Shoes ....℘ keg 5.37½
Dunning's Finished Steel $11.0

Ice Awls, Chisels, &c.
American Ice Chisel ....℘ doz. $3.50 net
National " ....℘ doz $9.25 dis 20 %
Novelty Ice Breakers ....℘ doz $6.25 dis 20 %
White's Sliding Head Picks ....℘ doz $2.50 dis 40 %
Dunlap's Ring Picks ....℘ doz $3.00, dis 40&10 %
Wood Head Picks, Sargent's ....℘ doz $1.60, dis 40&10 %
Iron " ....℘ doz 1.25, dis 40&10 %
Ice Mallets Pick in Head ....℘ doz 1.75 net
" Pick in Handle ....℘ doz 3.00 net
Ice Axes, Small, Cast or Malleable ..℘ doz 1.20 dis 10 %
Kitchen Ice Tongs ....℘ doz 2.25 net
Combination Ice Tools ....℘ doz $200 net

Kettles.
Brass, 7 to 13 inches inclusive ....℘ ℔ 30c net
Brass larger than 13 inches ....℘ ℔ 35c net
Enameled ....dis 50 %

Knives.
Ames' Butcher Knives ....dis 20 %
" Shoe " ....dis 15 %
" Bread " ....℘ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives ....dis 20 %
Hay and Straw—Wadsworth's ....dis 33⅓ %
Table and Pocket ....See Cutlery

Knobs.
Carriage (Jap'd 80c. ℘ gross) ....dis 60 &10%
Base—Common ....dis 30&10%
Hemacite Door Knobs ....New list, dis 35&5 %
Door, Mineral / " Por Jap'd / " " Plated / " " Por } Same discounts as Door Locks.
Furniture, Plain ....79c gross inch, dis 10 %
" Wood Screws ....dis 10 %
Picture (T. & S. Mfg. Co.) ....dis 50&10 %
" Sargent's ....dis 60&10 %
Hemacite Picture ....dis 35 %
Shutter, Porcelain ....dis 50&10 %

Ladles.
Melting—Sargent's ....dis 50&10 %
" Reading ....dis 30&10 %
" Monroe's Patent ....℘ doz $4.00, dis 40 %
" P. S. & W ....dis 30&10 %

Lanterns.
Tubular ....No. 0, $8.65; No. 1, $10.15 / With Guards 35c extra } net
Nail City ....No. 1, per doz., $10; No. 2, $9, net
Meteor ....No. 1, per doz., $9.50; No. 2, $8.50, net
Hurricane No. 2 ....℘ doz $5.75 net
Peerless ....No. 5, ℘ doz $11.75, dis 10&10 %
Brady's Patent ....dis 10&10 %
Ætna ....dis 10&10 %
Yankee ....dis 10&10 %
De Beque ....dis 10&10 %
Police..Small, $6.25; Med., $7.50; Large, $12.00, dis 10 %
Convex Reflector ....$2.75 ℘ doz, dis 10%

Lawn Mowers.
Pennsylvania, Philadelphia and Excelsior, new list ....dis 30 %

Lemon Squeezers.
Porcelain Lined ....℘ doz $6.00—dis 30 %
Wood ....℘ doz $3.00—dis 30 %
Eureka, Tinned ....℘ doz $8.00—dis 10 %
Dunlap's Improved ....℘ doz $4.00 net
Sammis' ....No. 1, $7.00; No. 2, $12.00 ℘ doz; dis 45 %
Townsend's Patent ....$6.00 ℘ doz., dis 33⅓ %

Lines.—Linen Fish ....dis 25&10 %
Cotton Chalk ....dis 55 %
Sil. Lake Chalk ....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50 ....dis 25 %
Mason's Linen ....dis 25&10 %
Wire Clothes, Galvanized ....each 25 @ 40c net

Locks and Latches.
Cabinet Eagle / " Gaylord / " Bridgeport } Changes made in list price of some numbers Jan. 1, 1881, dis 25&2 %
" P. & F. Corbin ....dis 60 %
" A. E. Deitz ....dis 30@40
Trunk, new list, Jan. 1, 1881 ....dis 15&2 %
Langstroth & Crane's List Jan. 1 '77.
Round Key, No. 1 to 5 ....dis 40&10 %
" No. 1½ to 12 ....dis 40& 10 %
Flat Key ....dis 33⅓&10 %
A. E. Deitz, Flat Key ....dis 30@40 %
Yale Lock Co., Flat Key ....dis 40 %
"Shepardson" or "U. S." ....dis 35 %
"Feiter" or "American" ....dis 33⅓ %
Plate ....dis 33⅓&2 %
F. Many's "Extension Cylinder" ....$10.50 ℘ doz. [illegible]

DOOR LOCKS, &C
Branford / Norwalk / Norwich / P. & F. Corbin / Russell & Erwin / Mallory, Wheeler & Co. / Reading Hardware Co. / Trenton Lock Co. } List of June 10, with changes of Dec. 1, 1880, and April 19, 1881, dis 45&2 %
Padlocks—Russell & Erwin / " Mallory, Wheeler & Co. / " Wm. Wilcox & Co. } ....dis 40 % and 2 % for cash
" Yale Lock Mfg. Co.'s "Standard" ....dis 40 %
" Romer's ....dis 30 %
" Conestoga ....dis 60 %
" J. H. McWilliams ....dis 10 %
" A. E. Dietz ....dis 35 %
" "Star" ....dis. 35 %

Lustre.—4-oz. bottles, per doz, $2; per gro, $18; net

Mallets.—Hickory ....dis 10&10 %
" Lignumvitæ ....dis 10&10 %
Penfield Block Co., Lig., Apple & Hickory ....dis 30 %

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 2 3 4
℘ doz ..$14.00 17.00 19.00 30.00—dis 30 %
Miles' Challenge ....Nos. 1 2 3
℘ doz ..$22.00 30.00 40.00—dis 35 %
Perry's Nos. 1 2 3 4 4 G'rd 5 G'rd
Each ....$3.00 4.00 5.00 11.00 13.00 36.00—dis 30
Woodruff's (P. S. & W.) ....Nos. 100 150
℘ doz $15.00 18.00 dis 30 %
Hales' ....Nos. 11 12 13
℘ doz ..$27.00 33.00 45.00 ..dis 40&10&2 %
Draw Cut ....Nos 5 2 6 8 10
Each ..$50.00 75.00 80.00 225.00 400.00—dis 20 %
American ....dis 25 %
Nos ....1 2 3 4 B 5
Each $5.00 7.00 10.00 25.00 40.00 60.00
Kieser's No. 55 ....$40 per doz., dis 40
" Gem ....$25 per doz., dis 40
Silver & Deming ....dis 25
Pennsylvania ....dis 40&10 %
Nos 1 2 3 00
℘ doz $24.00 28.00 36.00 28.00
Beef Shavers (Enterprise Mfg. Co) ....dis 30 %

Mincing Knives.
Am., (2d quality) per gross, 1 blade, $7; 2 blades, $12; 3 blades, $18 ....net
Lothrop's ....dis 20&10 %
Smith's ..per doz, Single, $1.35; Double, $1.80; dis 10 %
Cowles Hdw. Co ....dis 50&10 %

Molasses Gates.
Stebbins Pattern ....dis 80
" Genuine ....dis 75&10 %
" Tinned Ends ....dis 40&10 %
Chase's Hard Metal ....dis 50&10 %
Bush's ....dis 20 %
Lincoln's Pattern ....dis 50&10 %
Weed's ....dis 15 %
Boss, No. 1 2 3 4
$7.00 $8.00 $9.00 $10.00 per doz
" Japanned Finish ....dis 60&10
" Bronze " ....dis 50&10

Nails ....See Trade Repo[rt]

Nuts and Washers.—(In lots less than 100 lb add ¼c to list.)
Square Nuts ....7½c off list
Hexagon Nuts ....7¼c off list
Washers ....7c off list

Nut Crackers
Table (Humason & Beckley Mfg. Co.) ....dis 33⅓ %
Blake's Pattern ....℘ doz $2.50, dis 10 %
Turner & Seymour Mfg. Co ....dis 40 %

Oakum.
Best ....℘ ℔ 11c
U. S. Navy ....℘ ℔ 10c
Navy ....℘ ℔ 8½c

Oilers.—Zinc and Tin ....dis 65 %
Brass and Copper ....dis 50 %
Malleable (Hammer's) ....℘ doz $4.00, dis 10 %
Prior's Patent or "Paragon Zinc ....dis 60 %
" " Brass ....dis 50 %
Olmstead's, Tin and Zinc ....dis 60 %
" Brass and Copper ....dis 50 %
Broughton's, Zinc ....dis 60 %
" Brass ....dis 50 %

Ox Balls ....dis 50&10

Pencils.
Faber's Carpenters' ....High list, dis 40&10 %
" Round Gilt ....℘ gross $5.25 net
Dixon's Lead ....℘ gross 4.50 net
" Lumber ....℘ gross
Dixon's Carpenters' ....dis 40 & 10 %

Packing, Steam.
N. Y. Belting and Packing Co ....dis 20 %

Picture Nails.
Brass Head, Sargent's list ....dis 50&10 %
" T. & S. Mfg. Co ....dis 40 %
Porcelain Head, Sargent's List ....dis 50&10 %
" " Judd's List ....dis 30 %
Porcelain Head, T. & S. Mfg. Co ....dis 33⅓ %
Niles' Patent ....dis 25 %

Picks and Mattocks ....dis 35

Pinking Irons ....℘ doz 75c, net

Plaiting Machines.
Magic ....℘ doz $10.00, net
Astor Plaiting Machine ....each $15.00, dis 20 %
Crown Plaiting Machines ....dis 25 %
6in., $6.00, 10in., $8.00 each

Planes and Plane Irons.
Bench, First Quality ....dis 30&5 %
" Second " ....dis 40 %
Moulding ....dis 25&5 %
Bailey's (Stanley R. & L. Co.) new list Jan. '79, dis 20&10 %
The Stanley (S. R. & L. Co.) " " dis 20&10 %
Bailey's "Victor" ....dis 20&10 %
Defiance Adjustable ....dis 20&10 %
Laflin Mfg. Co ....dis 35 %
Plane Irons, Butcher's ....$5.50 to £
" Buck Bros ....$5.00 to £
" Auburn Tool Co.'s ....dis 20 %
" The Globe Mfg. Co. "Baldwin Iron" ....dis 20 %
" Ohio Tool Co ....dis 20 %
" Sandusky Tool Co ....dis 20

Pliers and Nippers.
Button's Patent ....dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers No. 2: 5 in. $20; No. 4, 7 in., $30 ℘ doz ....dis 45 %
Humason & Beckley Mfg. Co ....dis 30&10 %
Gas Pliers ....dis 50 %
Eureka Pliers and Nippers ....dis 25 %
Russell's Parallel ....dis 25 %
P. S. & W. Cast Steel ....dis 35 %
" Tinners' Cutting Nippers ....dis 15 %

Plumbs and Levels.
Disston's ....dis 40 %
Stanley R. & L. Co.'s Pat. Adjustable ....dis 65&10 %
" " " Non-Adjustable ....dis 55&10 %
Chapin's Patent Adjustable ....dis 65&10 %
" Non-Adjustable ....dis 65&10 %
Standard Rule Co.'s New Adjustable ....dis 65&10 %
" " Non-Adjustable ....dis 65&10 %
Johnson's Patent Adjustable ....dis 65&10 %
Pocket Levels ....dis 65&10 %
Davis' Inclinometers ....dis 30 %

Post Hole and Tree Augers.
Samson Post Hole Digger ....per doz $37.50, dis 20 %
Fletcher Post Hole Augers ....℘ doz 36.00, dis 20 %
Vaughan's Post Hole—6 in. $23.60; 7, 8 and 9 in. $25 per doz ....dis 20&10 %
Eureka Diggers ℘ doz. $40.00 ....dis 25&10 %
Leed's each $2.50 ....net

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw per doz $19.00, dis 20 %
" Pruning Hook ....12.50, dis 20 %
E. S Lee & Co.'s Pruner ....dis 30 %
Pruning Shears ....℘ doz $5.50@$6.00

Pulleys.
Hot House and Tackle ....dis 65&10 %
Jap'd Screw ....dis 65&10 %
Brass Screw ....dis 60&10 %
Jap'd Side ....dis 65&10 %
" Clothes Line ....dis 60&10 %
Hay Fork Solid Eye, ...$4.50; Swivel, $5.00, dis 50&10 %
" " "Anti-Friction," ....$7.50 dis 40&5 %
" " "F" Common and Pat. Bushed ....dis 20 %
" " Tarbox Pat. Iron ....dis 20 %
Shade Rack ....dis 50 %

Punches.
Belt or Drive ....℘ doz $2.00; 2.25; 2.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive ....dis 50&5 %
" " Springfield Socket ....dis 50&5 %
Spring ....℘ doz $7.00, dis 50& 5%
" Leach's Patent ....dis 15%
Bemis & Call Co.'s Spring and Check ....dis 40 %
Solid, Tinners' ....℘ doz $1.44, dis 40 %

Rail.
Sliding Door Wrought Brass.....₩ ℔ 44c dis 30 %
" " Iron, Painted ..₩ foot 40.dis 10&10 %
Barn Door....Inch..... ⅜ ½ ⅝
Per 100 feet. $2.00 3.00 5.00—dis 10 %
" for N. E. Hangers—
Small. Med. Large.
Per 100 feet. .. ....$2.10 3.70 5.90—net

Hazors.
J. R. Torrey Razor Co.....dis 15 %

Razor Strops.
Genuine Emerson.....dis 60 %
Badger's Emerson.....dis 40 %
Badger's (not Emerson).....dis 30 %
Evans'.....dis 40 %
Imitation Emerson.....₩ doz $2.00, dis 20 %
Hunt's. . .....dis 40&2 %
Chapman. ... .dis 15 @ 20 %
Saunder's.....dis 10 %
Torrey's .....dis 20 %

Rivets.
Iron and Tinned.....dis 65 %
In bulk, list of May 21.....dis 45 %
Copper Rivets and Burs.....dis 33⅓ %
Nos.. " 8 9 10 11 12 13 14 15 16
₩ ℔..400 500 520 540 560 580 600 650 700&5 %
Burr's.....dis 45 %

Rivet Sets.....dis 40 %

Rods.
Stair, Brass.....dis 25 %
Stair, Black Walnut.....dis 40 %
Stair, Amer can Patent .....dis 20 %

Rollers
Barn Door, Sargent's list .....dis 60&10&10 %
Acme (Anti-Friction).....dis 50 %

Rope.—Manf's' Net List, Sept. 25, 1881. dis on 5000 lbs and over, 1½c ₩ ℔
Manila .....⅜ inch and larger ₩ ℔ 15½c
" .....⅜ inch ₩ ℔ 18 c
" .....¼ and 7-16 inch ₩ ℔ 16½c
" Tar'd Rope.....₩ ℔ 15 c
" " Lath Yarn.....₩ ℔ 15 c
" Hay Rope. .....₩ ℔ 14½c
Sisal.....½ inch and larger ₩ ℔ 10 c
" .....⅝ inch ₩ ℔ 10½c
" .....¼ and 7-16 inch ₩ ℔ 11 c
" Hay Rope.....₩ ℔ 10 c

Rules.	Boxwood.	Ivory.
Caspin's, Standard, Stanley	dis 70&10 %	dis 60&10 %

Sad Irons.
From 4 to 10 lbs.....₩ ℔ 35c net
Self-Heating.....₩ doz $9.00 net
" Tailors'.....₩ doz $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Mrs. Pott's Irons, Double Pointed.....dis 40 %
Mrs. Pott's Irons, Square Back.....dis 45 %
Enterprise Star Irons.....dis 45 %
Combined Fluter and Sad Iron..per doz $15.00, dis 15 %

Sand Paper.
Bieder & Adamson's Flint, 00 to 1½..$4.75 ₩ ream
" " " 2, 2½ & 3. 4.25 ₩ ream
" " " Assorted 4.75 ₩ ream
" " Star..... 3.75 ₩ ream
" " Emery..₩ ream $6.50 @ 11.50
Barties Flint, same list as B & A.....dis. 25%
" Harrison, $3.75 per ream.....dis 25%
New England, same list as B. & A. Flint.....dis 25 %
Gage's.....dis 30& 5%

Sash Cord.
Common.....₩ ℔ 16c net
Patent.....₩ ℔ 18c net
Silver Lake Hemp.....₩ ℔ 40c. dis 10 %
White Cotton.....₩ ℔ 40c. dis 10 %
Drab Cotton .....₩ ℔ 45c. dis 10 %
Raw Hide.....dis 25 %
Steel Ribbon.....dis 10 %

Sash Locks.
Clark's, No. 1, $10.80; No. 2, $8.00 per gross.....dis 33⅓%
Ferguson's.....dis 33⅓ %
Walker's.....net
Hammond's Window Springs.....dis 25 %
Northup Window Springs, No. 1, $10.00; ₩ gross.dis 15 %
The Perfect, Clark & Smith, Plain Jap'd ₩ gro $10.00 net
" " Por. Knob Jap'd. ₩ gro 14.00 net
" " Nickel-Plated...₩ gro 27.00 net
"Universal".....dis 50 %

Sash Weights.—Solid Eyes, in 500 ℔ lots and over.....₩ ℔ 13½c net

Sausage Stuffers or Fillers.
Miles.....₩ doz, $20 dis 30 %
Perry.....₩ doz, No. 15; No. 0, $21, dis 30 %
Draw Cut No. 4.....each $32.00, dis 20 4
Enterprise Mfg. Co.....dis 30 %
Silver's.....dis 25%

Saws.
Disston's Circular.....dis 40 %
" Mill.....dis 40 %
" Cross Cut.....dis 40 %
" Hand, Panel, Rip, &c.....dis 20 %
Boynton's Lightning, Cross Cuts, new list.....dis 20 %
" One-Man, all lengths. " .....dis 25 %
" Billet Webs, 30 in..dis 25 %
" Lightning Buck Saws X Bar.....dis 25 %
" Lightning Hand, Panel and Rip.....dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand.....dis 20 %
W. M. & C. Mfg. Co. Cross-Cuts, except Monarch, dis 20 %
Livingston's Butcher and Kitchen.....dis 20 %
" Framed Wood—

Nos....	101	102	103	104	105
Per doz..$12.00	8.40	10.00	7.40	5.25 net	

Saw Frames.
White, Vermont.....₩ doz $1.25, dis 25 %
Red, Polished and Varnished.....₩ doz $2.00, dis 10 %
Saw Rods. .....$10 list dis. 10&25 %

Saw Nuts.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz.. $10.00.....dis 20 %
Stillman's Genuine.....₩ doz $3.00 and $4.50 dis 10 %
" Imitation.....₩ do $2.25, dis 10&10 %
Common Lever. .....per doz $2.00, dis 20&10 %
Leach's.....No. 0, $8.00; No. 1, $15.00. dis 15 %
Nash's.....No. 7 $8.50; No. 2, $5.50. dis 20&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
" Bemis & Call Co.'s New Pat.....dis 30&2 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 30&2 %
" " Plate.....dis 10 %
" " Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00. dis 60&10 %
" Imitation.....$7 00. dis 60 %
Hart's Patent Lever.....dis 20 %
Disston's.....dis 20 %
Morrill's.....No. 1, $15; No. 2, $14, dis. 40 %

Scales.
Hatch, Counter, No. 171.....₩ doz $36, dis 35&10 %
" Tea, No. 161.....₩ doz $12.00 dis 40&10 %
Union Platform.....$6.00. dis 45 %
Fairbanks'.....dis 20 %
Buffalo Scale Co.....dis20&2 %
Howe's.....dis 20&2 %
Chatillon's Grocers'.....dis 45 %
" Eureka.....dis 25 %
Family Universal.....dis 50 %
" Favorite .....dis 30 %
" Turnbull's.....dis 30 %
Scale Beams, Chatillon's list.....dis 25 %
" Sargent's list.....dis 50&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.40.dis 20&10 %
Box, 1 Handle.....₩ doz $4.00, dis 10 %
" 2 " .....₩ doz 6.00 dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 55 %
Ship (common).....per doz $3.00 net
" (Providence Tool Co.....dis 10%

Screw Drivers.
Douglass Mfg. Co.....dis 20&10&10 %
Disston's.....dis 40 %
Disston's Patent Excelsior.....dis 40 %
Buck Bros .....dis 25 %
Stanley Rule & Level Co's., Varnished Hdls..dis 50&10 %
" " Black Handles...dis 40&10 %
Sargent & Co.'s.....dis 50&10 %
Gay's Double Action Ratchet per doz., 4 in., $9.00; 5 in., $10.20; 6in., $12.00 dis 30 %
Cowles Hdw. Co., No. 1 Extra.....dis 40&10 %
" " No. 1.....dis 50&10 %
" " Nos. 4 and 00.....dis 30 %
Clark's Patent.....dis 25 %

Screws.
Flat H'd Iron.....New list April 27, 1881.....dis 40 %
Round Head Iron. " " .....dis 35 %
" Flat Head Brass... " .....dis 40 %
" Round Head Brass " .....dis 30 %
Brass and Silver Capped.....dis 40 %
Japanned, list of Plain Screws.....dis 25&10 %
Coach Patent Gimlet Point, List per 100....dis 60&10 %
Coach, Common.....dis 60&10 %
Bed.....dis 10 %
Machine, Flat Head, Iron.....dis 55 %
" " Round Head, Iron.....dis 50 %
Bench, Iron.....dis 60&10 %
" Wood, Beech .....₩ doz $3.00, dis 10 %
" " Hickory.....dis 20&10 %
Hand.....dis 25&10 %
Hand Rail, Sargent's.....dis 66⅔&10 %
" " Humason, Beckley & Co's .....dis 40 %
" " Am. Screw Co., list of Jan. 1, '81.dis 60&10 %
Jack (Wilson's).....dis 30 %

Screw Window Balances.
R. B. Hugunin's.....$36.00 per gross, dis 25&5 %

Scroll Saws.
Lester, $10.00.....dis 30 %
Rogers, $3.50.....dis 25 %

Shears and Scissors.
American (Cast) Iron.....dis 70&10 %
Clipper Cast Iron.....dis 70&10
Pruning. .....see Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....₩ doz $3.75
Tinners'.....dis 15 %
Seymour's, List, Nov. 25, 1879.....dis 60&10 %
Heinisch's " " .....dis 60 %
" Tailors' Shears.....dis 33⅓ %
Mass. Cutlery Co. St. Trimmers.....dis 75 %

Sheaves.
Sliding Door, M. W. & Co., list.....dis 45&2 %
" R. & E. list.....dis 60&10&2 %
" Patent Roller.....dis 10 %
" " " Hatfield's ...dis 60&10&2 %
" Russell's Anti-Friction ....dis 60&10&2 %
" Moore's Anti-Friction.. ....dis 45 %
Sliding Shutter, R. & E. list.....dis 60&10&2 %
" " Sargent's list.....dis 60&10 %
" " Reading list.....dis 55&10 %
Moore's Anti-Friction (Hanging).....dis 45 %

Shovels and Spades.
Ames. New list, July 1, 1881.....dis 15 %
Griffiths.....dis 40&10 %
Old Colony.....dis 15,5

Payne Pettebone & Son, new list.....dis 40&10 %
" " R. R. Shovels .....dis 15 %
Remington's (Lowman's Patent).....dis 30 %
Rowland's.....dis 40&10 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list.....dis 60&10&2 %
Polished Steel .....new list. dis 40&10&2 %

Slates.
Square Frames.....by case.....dis 70 %
Less than a case.....dis 66&10 %

Spoke Shaves.
Defiance Metallic.....dis 20&10 %
Iron.....dis 45 %
Wood.....dis 30&10 %
Bailey's (Stanley R & L. Co.) new list..... dis 30&10 %
Stearns'.....dis 30&10 %

Spoke Trimmers.
Bonney's.....₩ doz $10.00 dis 40&5 %
Stearn's.....₩ doz $9.00 dis 20&10 %
Ives'.....No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 50&10 %
Douglass'.....₩ doz $9.00. dis 15 %

Spoons.
Basting.....dis 60&10&10 %
Riveted Table and Tea.....dis 55 %
Solid Table and Tea.....dis 45 %
Britannia.....dis 65&5 %
Keen & Barton.....dis 40&2&2 %
Hall & Elton.....dis 40&2&2 %
Holmes, Booth & Haydens.....dis 40&2&5 %
German Silver.....dis 30&10&5 %
Cast Steel, Sil. Plated.....dis 33⅓ %
Tin (P. S. & W.), Teas.....$1.25 ₩ gross, net
" " Tables.....$2.00 ₩ gross, net
Tin Cowles Hdw Co.).....dis 10 %
" " case lots.....dis 20 %

Stocks and Dies.
"Lightning" Screw Plate.....dis 10 %

Stone.
Hindostan No. 1, 6 c; Axe, 8c.....dis 20&10 %
Hindostan Hacker Stone.....₩ gross $12.00 dis 10 %
Sand Stone.....₩ ℔ 6c dis 33⅓&10 %
Washita Stone.....No 1. ₩ ℔ 20c net
" .....No 2. ₩ ℔ 16½c net
" Slips.....No. 1. ₩ ℔ 40c net
Arkansas Stone No. 1, 4 to 6 in.....₩ ℔ $1.35 net.
" No 1, 6 to 9 in.....₩ ℔ $2.00 net
Turkey Oil Stone (Chase).....4 to 8in, $1.00 ₩ ℔,
" Slips " .....$2.50 ₩ ℔ dis 10 %
Lake Superior (Chase).....₩ ℔ 20c, dis 10&5 %
" " Slips " .....₩ ℔ 45c, dis 10&5 %
Grindstones. Family, Loring's.....dis 10 %

Stove Polish.
Joseph Dixon's.....₩ gross $6.00 dis 10 %
Gem.....₩ gross $4.50, dis 10 %
Gold Medal.....₩ gross $5.00, dis 25 %
"Mirror".....₩ gross $6.00, dis 5 %
Ruby.....₩ gross $3.75, net
Rising Sun.....₩ gross $5.75, net
Dixon's Plumbago.....₩ ℔ 8c, net

Squares.
Steel.....dis 50 %; full cases, dis 50&10 %
Iron.....dis 50 % full cases, dis 50&10 %
Nickel Plated.....add $2.50 @ $4.00 ₩ doz. net
Try Squares and T Bevels.....dis 50&10
Disston's Try Square and T Bevels.....dis 40 %
Winterbottom's Try and Mitre.....dis 20&10 %

2 % cash

Tacks, Brads, &c.
List of April 2, 1880
Tinned Swedes Tacks.....dis 50 %
Tinned American " .....dis 60 %
Swedes Tacks, all kinds.....dis 40 %
Copper Tacks and Nails.....dis 33⅓ %
Swedes Hungarian Nails .....dis 33⅓ %
Gimp and Lace Tacks.....dis 33⅓ %
" " Tinned .....dis 40 %
Finishing Nails.....dis 30 %
Trunk and Clout Nails.....dis 31 %
Common and Patent Brads.....dis 30 %
Basket Nails .....dis 25 %
Brush Tacks.....dis 25 %
Leathered Carpet Tacks.....dis 30 %
American Cut Tacks.....dis 33⅓ %
Cigar Box Nails.....dis 33⅓ %
Chair Nails.....dis 33⅓ %
Double-Pointed Tacks .....dis 40&5 %

Extra 10 % on all.

Tap Borer
Common and Ring.....dis 20 %
Ives' Tap Borers.....dis 15&10 %
Enterprise Mfg. Co.....dis 30 %

Tapes, Measuring.
American.....dis 20 %
Spring Tapes.....dis 25&10 %

Thermometers.
Tin Case.....dis 70 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 25 %
Wood Bottom.....₩ doz $12.00, dis 40&2 %
All Iron.....₩ doz $9.50, dis 40&5 %
Nashua Lock Co.'s.....₩ doz $12 00, dis 60&5 %
Wilson's.....dis 35 %

Toe Calks.—Winsted.....₩ ℔ 9c. dis 5

Tinners' Tools and Machines.
Machines (P. T. & W.).....list add 20 %
Tools (P. S. & W.).....add 5 %

Transom Lifters.
Wollensak's Patent.....dis35 %
Richer's Patent.....dis 20&10&10 %
Excelsior.....dis 50&10&2 %

Traps.
Game, Newhouse.....dis 35 %
" Oneida Pattern.....dis 50 @ 55 %
" Blake's Patent.....dis 40 %
Mouse, Wood, Choker.....₩ doz holes 10&5@
" Round Wire.....₩ doz $1.50, dis 10 %
" Cage " .....₩ doz $2.50, dis 10 %
" Catch-em-alive.....₩ doz $2.50, dis 10 %
Rat. "Decoy".....per doz $10.00, dis 10 %

Trowels.
Lothrops Brick and Plastering.....dis 25 %
Reed's Brick and Plastering.....dis 15 %
Disston's Brick and Plastering.....dis 20 %
Peace's Plastering.....dis 30 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 %
Brades' Brick.....dis 20 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis55&10 %

Triers.
Butter and Cheese.....dis 20%

Vises.
Solid Box.....List of July 1, '79 dis 35 %
" "Crown" (A. H. Hildick) 40 to 100 ℔, 15c net
" Peter Wrights.....15c
" Wilkinson's.....13½c
Parallel, Parker's.....dis 10 %
" Wilson's.....dis 25 %
" Howard's.....dis 20&10 %
" Merrill's.....dis 15 %
" Sargent's.....dis 50&10 %
" Trenton.....dis 30 %
" Backus and Union.....dis 40 %
" Oval Slide.....dis 40 %
" Double Screw Leg.....dis 15&10 %
" Prentiss.....dis 25 %
" Simpson's Adjustable.....dis 25 %
"Family." List.....net
Saw Filers, Bonney's.....₩ doz $12.00, dis 20&10 %
" Stearn's.....dis 20&10 %
" Hopkins'.....₩ doz $17.50 dis 10 %
Reading.....dis 40&10 %
Lowell Hand Vises.....dis 20 %
Richardson's Vise and Anvil.....dis 25 %

Washer Cutters.
Smith's Patent .....₩ doz $12.00 dis 25 %
Johnson's.....₩ doz $12.00. dis 33⅓ %
Penny's.....₩ doz $14.00 and $16.00. dis 55 %
Appleton's.....₩ doz $16.00, dis 60&10 %

Washers.—See Nuts and Washers.

Well Wheels......dis 60&10c&10%

Wire.
Brass and Copper... List of June 10, 1880.....dis 30 %
Bright and Annealed.....Nos. 0 @ 18. dis 55 %
" " .....Nos. 19 @ 20. dis 60 %
" " .....Nos. 27 @ 30. dis 65 %
Coppered.....Nos. 0 @ 18. dis 50 %
Galvanized, Nos. 0 to 18.....market list. dis 45 %
Tinned, Nos. 0 to 18.....dis 45 %
Cast Steel.....dis 40 %
Tinned Broom Wire, Nos. 18 to 26.....dis 55 %
Annealed Fence, Nos. 8 and 9 .....dis 55 %
" Grape, Nos. 10 to 14. .....dis 55 %
Galvanized Telegraph, Nos. 7 to 9 .....₩ ℔ 9c
" " Nos. 10 and 11.....₩ ℔ 10c
" " No .....₩ ℔ 10½c
Fence Staples.....₩ ℔ 5½ @ 5¾c
" Staples, Galvanized.....₩ ℔ 7 @ 7½c
Stubs Steel Wire.....$7.00 to $
Japanned Barb Fence.....₩ ℔ 9c
Galvanized .....₩ ℔ 10c
Steel Music Wire, Nos. 12 to 27.....₩ ℔ $1.35. net
Turner & Seymour Mfg. Co., Picture Wire..dis 80&20 %
Judd's Picture Wire.....dis 80&20 %
Clothes Line Wire, Galvanized.....₩ coil 250@400 net
Wire Cloth, green and drab.....₩ sq. ft, 3 c net

Wrenches.
American Adjustable.....dis 40 %
Baxter's Adjustable "S,".....list Jan., 1880. dis 20&5 %
" Diagonal.....dis 20&5 %
Coes 'Genuine.....dis 5 %
" "Mechanics".....dis 60&10 %
" Pattern, Malleable.....dis 75 %
" " Wrought.....dis 60 %
Girard Standard.....dis 60 %
Girard Agt. .....70&5 %
Bemis & Call's Patent Combination.....dis 20%
" " Merrick's Pattern.....dis 35 %
" " Briggs' Pattern .....dis 25 %
" " Cylinder or Gas Pipe.....dis 40 %
Van Wagoner & Williams' Basin .....per doz $2.50
Aiken Pocket (Bright).....$5.00, dis 60&10 %
The Favorite Pocket (Bright).....per doz $3, dis 60 %
Webster's Pat. Combination.....dis 25 %

Wringers. Per doz

Universal, XX	No. 2½		$67.00
" "	No. 2		69.00
" "	No. 1½		71.00
" "	No. 1		93.00
" "	No. 8...	each,	12 00
" "	No. 12.	"	20.00
" "	No. 18.	"	25.00
" "	No. 22.	"	32.00
Peerless,	No. 0, no Cogs		51.00
"	No. 1,		54.00
"	No. 2½ with Cogs		60.00
"	No. 2, "		64.00
"	No. 3, "		71.00
"	No. 4, "		80.00
Unique,	No. 0		51.00
	No. 1		54.00

dis 35 & 5 %

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MANUFACTURERS OF

Steel Wire

For All Purposes.

Special Finest CAST STEEL WIRE,

MARKET STEEL WIRE, PRIME COPPERED SPRING WIRE, TEMPERED AND UNTEMPERED STEEL WIRES, IN LONG LENGTHS, FOR CRINOLINE, CORSET, LOCK AND BRUSH MAKERS, AND ALL SPECIAL PURPOSES.

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"DOG BRAND" FILES.

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STEEL Gautier Steel.

See Page 3.

Steel.

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And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

Warranted most superior for TOOLS AND GRANITE ROCK DRILLS.

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Manufacturers of all Descriptions of Steel.

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(SIEMENS' PROCESS,)

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Steel Wire Rods,
Steel Locomotive Fire Boxes,
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Removed to 30 Gold Street, New York.

Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS, TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for CLOCK SPRINGS, CORSET CLASPS, &c.

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Warranted Superior to any Steel in the Market, either English or American, for every purpose.

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ALL WEIGHTS.

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Special Steel

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Turns out at least **double work** by increased speed and feed, **and cuts harder metals** than any other Steel. Neither hardening nor tempering required.

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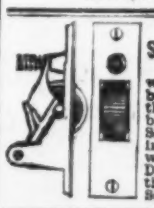

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SCREW WINDOW BALANCE

With which the Sashes work as with weights, their application being at an expense of one-half the cost of applied weights, no boxings being required. The Sashes are Locked with the meeting rail lock. Stands alone in its working. Price $1 per set (four.) Discount to the trade. In use over three years. Robt. B. Huguniu, Sole Maker, Hartford, Ct., U. S. A

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MERCHANT BAR, FISH PLATES, PIG METAL,

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Present Annual Capacity of these Works.

Fish Plates	15,000 tons
Merchant Bar	40,000 "
Pig Metal	140,000 "
Iron Rails	110,000 "
Steel Rails	100,000 "
Total Capacity per year	405,000 "

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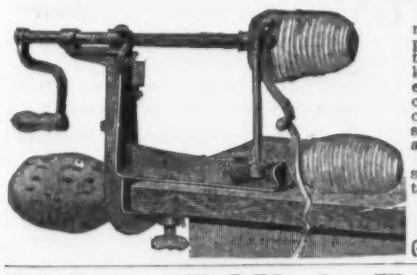
GOODELL'S WHITE MOUNTAIN POTATO PARER.

Patent Applied For.



The White Mountain Potato Parer is the only machine ever made that will not only pare a potato much better than it can be done by hand, taking off a thinner paring from every shape or kind of potato, but will go into and clean out the eyes, and altogether at a saving of at least 20 per cent. It is free from the objections made to the old style of rattletrap, geared parers; is solid and substantial, cannot get out of order, and so cheap as to be within the means of everybody.

Almost any of the Potato Parers in the market seem as if they might do the work better "next time," but the "White Mountain" DOES IT NOW.

Every Machine warranted as represented.

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BELLAIRE NAIL WORKS,

PIG IRON AND NAILS,

Manufacture the Celebrated Brand of

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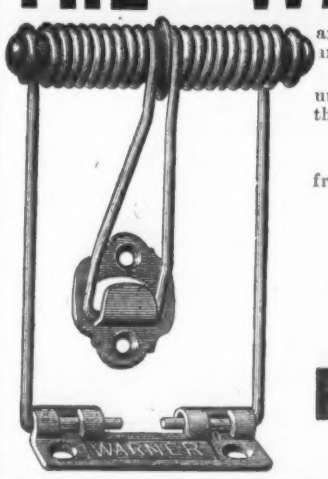
Office and Works, **Bellaire, Ohio.**

THE "WARNER" DOOR SPRINGS



are the most simple, most effective and most convenient ever introduced, and the immense sale we are having shows their great popularity and superiority.

There never was a Spring made that is so durable, so complete in its action, operating with a uniform pressure, holding the door **tight** when **closed,** and allowing it to open without increasing the pressure at any point.

When the door is opened about 130 degrees of a circle, it will press and hold it open.

The Spring is easily **unhooked** and **rehooked**—in an instant—from the **door** and also from the **jamb,** without removing a **screw** or **pin.**

This is a Convenience Possessed by no other Spring in the Market.

We are making this season three sizes, viz:
No. 1 For Screen or Light Storm Doors.
No. 2 For Medium Doors.
No. 3 For Heavy Doors.
They are for sale by most of the prominent jobbers of the United States and Canada.
Correspondence solicited.

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FREEPORT, ILLINOIS.

ESTABLISHED IN 1859.

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PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

ADVERTISEMENTS AND SUBSCRIPTIONS ARE RECEIVED AT THE VARIOUS OFFICES OF "THE IRON AGE," NAMELY:

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Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger*. ***The Week, Legal News, Trade Notes, Bankruptcies, Foreign Notes, Colonial Juttings, Merchants' Circulars, &c.,*** are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French, Belgian and other Special Correspondence.

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THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual, **presented free to every Subscriber to the IRONMONGER AND METAL TRADES' ADVERTISER.** It contains a large number of ruled skeleton pages for diary and other entries, and in addition much useful reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT,

With which is incorporated The Universal Engineer,

is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:

OCTOBER 8, NOVEMBER 6, DECEMBER 3 and 31, 1881, JANUARY 28, FEBRUARY 25, MARCH 25, APRIL 22, MAY 20, JUNE 17, JULY 8 AUGUST 5, and SEPTEMBER 2, 1882

This Supplement is published in

FOUR LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach but in the native language of eighty millions of *German*, forty-two millions of *French*, twenty-eight millions of *Italian*, and fifty-one millions of *Spanish* speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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THE WHOLE FOREIGN HARDWARE TRADE

so far as our experience of twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity not to be compared with any of the other ordinary channels of communication.

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Agent on this side

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Twenty years' practical Experience.

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Successors to JOHN R. WATSON, Perth Amboy, New Jersey.

Manufacturers of

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FOR ROLLING MILLS, BLAST FURNACES, FOUNDRIES, GAS WORKS, LIME KILNS, TANNERIES, BOILER and GRATE SETTING, GLASS WORKS, &c.

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OF ALL SHAPES AND SIZES.

Clay Gas Retorts and Retort Settings, and Miners and Shippers of Fire Clay.

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WORKS: Mt. Savage Junction, Md., and Lockport, Pa.

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CHAS. D. COLSON,

FIRE BRICK,

Foundry Facings, Sand, Tools and Supplies.

CHICAGO, ILL.

UNION MINING COMPANY.

Mount Savage Fire Brick.

EDWARD J. ETTING, Agent,

No. 230 South Third St., Philadelphia, Pa.

THOMAS MORTON,

Manufacturer of

CABLE, COPPER, IRON AND STEEL SASH CHAINS, for suspending window sashes. Also, Copper Champion Chains, with patent attachments, for same purpose. Agents wanted in the principal cities in the United States. Apply at

65 Elizabeth Street, New York.

HENRY DISSTON & SONS,

KEYSTONE SAW, TOOL, STEEL & FILE WORKS,

Front and Laurel Streets, PHILADELPHIA.

DISSTON'S SAMSON TREE PLANTER AND POST HOLE DIGGER.

Fig. 1.

Patented May 29, 1870.

Price, - - - $37.50 per dozen.

No Farmer, Nurseryman, Railroad or Telegraph Company

SHOULD BE WITHOUT ONE.

NO BACK-ACHE.

NO KNEE-WORK.

NO CLOGGING.

This tool has been thoroughly tested, and has given the greatest satisfaction to all who have tried it. The principle on which it works makes it self-cleaning and prevents adhesion in sticky soil; therefore it always works free and easy. It is far superior to all plungers, augers and boring machines, as it works well in stony, sandy, or clay soils; quicksand under water is as easily removed as though no water existed.

Fig. 2.

DIRECTIONS.

Plunge the Digger into the ground, as shown in cut, Fig. 1, and when the soil is loosened pull out the lever with one hand, as shown in cut, Fig. 2, which will press the dirt between the blades; then draw the Digger from the hole, keeping hold of the lever with one hand and the handle with the other. When the Digger is clear of the hole, you can deposit the load anywhere within reach by simply pressing down the lever, which will open the blades and the dirt will fall from between them. The Digger is then ready for another plunge. The steel blades are nine inches long, and the whole tool five feet long. *For sale at Hardware and Agricultural Stores.*

HENRY DISSTON & SONS.

STANDARD SHAFT COUPLING SPRING.

CHICAGO, July 24, '81.

Patented.

Gentlemen:

You may enter our order for 5000 sets of your Standard Shaft Coupling Springs (600 sets a month).

A. A. ABBOTT & CO.

Side View.

Front View.

One dozen pairs, japanned, expressed to the responsible Hardware or Carriage trades for $1.50 (per gross, $15, 4 mos. note, 5 per cent. off 30 days, 10 off spot cash). Discount to jobbers. Splendid selling article for commercial travelers. (Nickel plated springs $3 per doz. pairs. Dealers and the trade also supplied by the E. D. Clapp Mfg. Co., Auburn, N. Y., and Wilcox & Howe, Birmingham, Conn.; Crandall, Stone & Co., Mfrs. Carriage Trimmings, Binghamton, N. Y. Perfect Anti-Rattler and Shaft Bolt Locker, and looks neat on a buggy. Sold by all hardware dealers everywhere. Orders, large or small, filled promptly.

A. G. MOREY & CO., 90 Randolph Street, (McCormick Block), CHICAGO,

Manufacturers for U. S. & Canada, under Letters Patent.

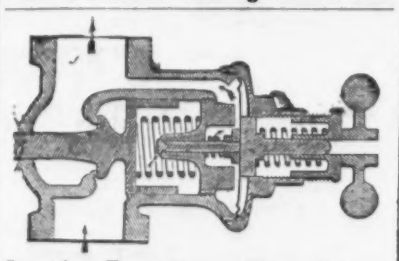
WM. L. DAVIS, Chelsea, Mass.,

Manufacturer of

WINDOW WEIGHTS,

Sole Manufacturer of

Park's Patent Folding Lunch Box.



Curtis Pressure Regulator.

Is made entirely of metal; occupies the same space as a globe valve. It has no glands or packing, and is a lock-up valve. Write for circular. Manufactured by

CURTIS REGULATOR CO.,

59 Beverly Street, BOSTON, MASS.

HOWARD IRON WORKS,

BUFFALO, N. Y.,

Manufacturers of

BENCH VISES,

Price Lists sent on application.

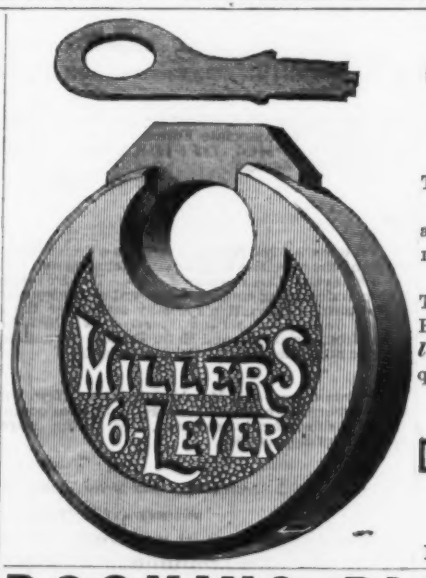
STEEL BRASS RUBBER **STAMPS** STENCIL BRANDS PAINT *STAMPING INK &c*

A. M. MICHAEL, ALBANY, N.Y.

Brass Molders and Manufacturers

write for sample and price of Fine Red Brass Molding Sand.

W. J. CHAPMAN, Baltimore, Md.



NEW DESIGN.

'Miller's 6-Lever'

Cast Brass Padlocks, with or without Tinned Iron Chain or Nickel Plating.

Awarded *"First Order of Merit"* at the International Exhibition at Melbourne, 1881.

Keys will not pass unless so made to order. The most secure, most durable and cheapest Padlock extant. *Master-Keyed Padlocks* to order in sets of any number required.

New price lists ready.

D. K. Miller Lock Company

821 Cherry Street,

PHILADELPHIA, PA.

ROCKING BLOCK GRATE,

Williams' Patent,

J. Q. MAYNARD,

General Agent.

97 Liberty Street, NEW YORK.

Fire level. Accumulation of cinders impossible. No cleaning out of fires during the day. Parts easily and cheaply replaced. Seventy per cent. of air space. Thirty days' trial. Send for circular.

GREEN'S PURE SILICA FIRE BRICK,

MADE BY

LACLEDE FIRE BRICK MANUFACTURING CO.,

SPECIALLY ADAPTED FOR

Pernot and Siemens Open Hearth Steel Furnaces and for Glass Furnaces.

Office, 901 Pine St., St. Louis, Mo.

REMOVAL.

Please notice that we have removed from **No. 295 THIRD AVENUE** to

No. 37 Warren Street, near Church St.,

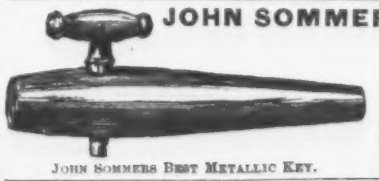
Where we hope to be favored with a continuance of your generous patronage.

J. M. FARRINGTON & CO.,

Successors to DAY, FARRINGTON & CO., Manufacturers of

LOCKS, KNOBS, GONGS, BLANK KEYS,

Wrought Store Door and Flush Bolts, Silver Plated, Ornamental Bronze and other Hardware.



JOHN SOMMERS BEST METALLIC KEY.

JOHN SOMMER'S SON, 8, 10 & 12 Pearl St., Newark, N. J.

Manufacturer of every description

WOODEN FAUCETS.

Cork Lined, first quality, warranted. Metallic Key, Lignumvitæ Key, Rosewood, Red Cedar, Cherry and Butternut Faucets.

John Sommer's Metallic Key and First Quality Cork-Lined Faucets are the best. Send for catalogue.

DAVID HYMES & CO.,

92 Church Street, New York,

JOB LOTS OF HARDWARE & CUTLERY.

John T. Lewis & Bros.

No. 231 South Front St., PHILADELPHIA.

JOHN T. LEWIS & BROS. WARRANTED PURE WHITE LEAD. PHILADA.

TRADE MARK.

MANUFACTURERS OF

Pure White Lead, Red Lead, Litharge, Orange Mineral, Linseed Oil, **AND PAINTERS' COLORS.**

Brooklyn White Lead Co.

TRADE MARK

White Lead, Red Lead & Litharge.

No. 182 Front Street, NEW YORK,

JOHN JEWETT & SONS,

Manufacturers of the well-known brand of

WHITE LEAD.

JEWETT & SONS, PERFECTLY PURE WHITE LEAD.

TRADE MARK

ALSO MANUFACTURERS OF

LINSEED OIL.

182 Front Street, NEW YORK.

ATLANTIC WHITE LEAD PURE WARRANTED ROBERT COLGATE & Co. TRADE MARK.

The Atlantic White Lead and Linseed Oil Co.,

Manufacturers of

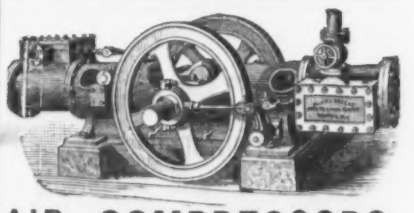
White Lead (Atlantic), Red Lead, Litharge, Glass Makers' Litharge and Orange Mineral;

LINSEED OIL,

Raw, Refined and Boiled.

ROBERT COLGATE & CO.,

287 Pearl St., NEW YORK.



AIR COMPRESSORS.

ALLEN'S

HIGH SPEED AIR COMPRESSORS,

With Positive Moving Valves.

Allen Engines, Stationary and Marine Boilers, Hoisting Machinery. Also, Patent Evaporators and Condensers for Animal Matters.

AIR COMPRESSORS A SPECIALTY.

JOHN McLAREN,

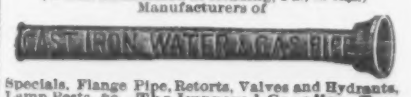
River Street, - - HOBOKEN, N. J.

Mellert Foundry & Machine Co.,

Limited,

(Works Established at Reading, Pa., in 1848.)

Manufacturers of



Specials, Flange Pipe, Retorts, Valves and Hydrants, Lamp Posts, &c. **The Improved Canadian Turbine Water Wheel.** Machinery and Castings for Furnaces, Rolling Mills, Grist and Saw Mills, Mining Pumps, Hoists, &c. Columns, Brackets, Iron Railings, &c.

Offices:

Second and Chestnut Sts., Reading, Pa., and 74 Pine Street, New York City.

PHILADELPHIA.

Corrected Weekly by Lloyd, Supplee & Walton.)

erms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ₱ lb ..10½c
Over 250 lbs ..11c
Eagle (American) ..10c ₱ lb—dis 20 %

Apple Parers.
Penn Apple Parer $6.50
Rotary Peach Parers 12.50
Lots of 10 to 25 dozen special prices.

Axes.
Hunt's Kentucky and Yankee..per doz $9.50 @ 10.00
Mann's Red Warrior " 9.00 @ 9.40
Richland Chief " 8.50 @ 9.00
Beveled Axes ..add 50c " net
Double Bit Axes ..net " 19.00

Augers and Auger Bits.—New List January 1.
Bates' Nut Augers ..dis 40 %
Cook's Augers ..dis 40&10 %
Watrous' Ship Augers ..dis 15 %
Benjamin Pierce Auger Bits ..dis 35 %
Griswold Auger Bits ..dis 40 %
Cook's " ..dis 40&10 %
Jennings' " ..dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₱ doz ..dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ₱ doz ..dis 20&10
Balances.
Light and Common ..dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ..dis 65&10 %
Swiss Pattern Hand Bells ..low list dis 40&10 %
Connell's Door Bells ..dis 20 %
Gt. Western & Kentucky Cow, new list ..dis 50 %

Bolt and Rivet Clippers.
Chambers' No. 1. for ⅜ bolt ..each, $7.50
" No. 2, " ½ " ..." 9.00 } dis 15 %
" No. 3. " ⅝ " ..." 12.00

Boring Machines.
Upright, without Augers ..List 5.50
Angular, without Augers ..." 6.75 } dis 40 %

Bolts.—Eastern Carriage Bolts ..dis 80 %
Philadelphia " ..new list dis 70&10 %
Stanley, Wrought Shutter ..dis 50&10 %

Braces.—Barber's ..dis 40&5 %
Backus ..dis 50 %
Spofford ..dis 50&5 %
American Ball ..dis 55 %

Butts.—Cast Fast Joint, Narrow ..dis 40&10 %
" " Broad ..dis 40&10 %
Cast Loose Joint, Narrow ..dis 50&10 %
" " Broad ..dis 50&10 %
" Acorn, Loose Pin ..dis 50&10 %
" " Jap'd ..dis 55&10 %
" Mayer's Loose Joint ..dis 50&10 %
Wrought Loose Pin ..dis 55&10 %
" Table Hinges and Back Flaps ..dis 50&10 %
" Narrow, Fast ..dis 50&10 %
" Loose Joint ..dis 55&10 %

Blind Butts.
Parker ..dis 70&2 %
Clark ..dis 70&2 %
Shepard ..dis 70&2 %
Lull & Porter ..dis 70&10 %
Huffer's ..dis 50 %

Chains.—German Halter and Coil, new list Oct. 22, 1879 ..dis 50&5 %
Galvanized Pump ..₱ lb 9½c net
Best Proof Coil Chain—English.

₱ lb	12	10	8¼	7½	7¼	7	gold
	5-16	¾	7-16	½	9-16	⅝	in.

Chisels.—Socket Framing ..dis 65&10 %
Socket Firmer ..dis 65&10 %
Butcher's ..$5.00 to £ gold

Casters.—Bed (new list July 1, 1880,) ..dis 40&5 %
Plate ..dis 40&5 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ..dis 45 %
Enterprise ..dis 35 %

Cutlery.—Walden Pocket ..new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ..dis 65&10 %
Adjustable Handle ..dis 15 %

Fry Pans.
Tinned ..dis 45 %

₱ doz.	$3.40	4.00	4.50	5.00	5.50	6.50	7.50	9.00	10.00
No.	0	1	2	3	4	5	6	7	8

Burnished ..dis 60&10 %

₱ doz.	$3.00	3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00
Fo.	0	1	2	3	4	5	6	7	8

Files.
Nicholson ..dis 40 %
Disston ..dis 40 %
Butcher ..$4.50 £
Spencer ..$4.50 @ 4.75 £
E. M. Boynton, new list ..25 %

Fluting Machines.
Eagle—3¼ in. roll ..each, $2.15 } dis 25 %
" —4¼ in. roll ..." 2.85 }
Crown—4¼ in. roll ..." 3.50 } dis 25 %
" —6 in. roll ..." 4.00 }
" —8 in. roll ..." 6.50 }
Geneva Fluter ..dis 25 %
Favorite corn Fluter & Sad Iron ..₱ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ..dis 30 %

Handles.
Boynton's Pat. Saw Handles ..35c per pair net.

Hatchets.
Yerkes & Plumb, new list ..dis 30 %
Hunt ..dis 20&10 %

Hinges.
Strap and T ..dis 50&10&10 %

Horse Nails.

	Nos.	5	6	7	8	9	10
Ausable		30	27	24	24	23	22
" Polished & P'd and Blued and Pointed		31	28	2	25	24	23
Globe	New list.	28	25	23	22	21	20
Clinton		22	20	19	18	17	
" Polished & Pointed		23	21	20	19	18	

Porter, all sizes ..₱ lb 15c. net
Discount on Ausable and Clinton, 30 %; Globe, 10%

Locks and Knobs.
Branford ..dis 45&2 %
Gaylord Cabinet ..dis 25&2 % cash
American Padlocks ..dis 40 &2 % cash
Scandinavian Padlocks ..dis 50 %

₱ doz.	$5.00	5.50	6.50	7.50	8.50	10.00	12.50	} dis 60 %
No.	47	48	59	60	61	62	63	
₱ doz.	$18.00			26.00		32.00		} dis 60 %
No.	54			55		56		

Lanterns.
Nail City ..₱ doz, $9.00 net
Square Candle and Oil ..₱ doz
Tubular ..No. 0, $3.65; No. 1, $10.15 ₱ doz net
Globes, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania ..} new list
Philadelphia ..} dis 30 %
Excelsior ..}

Lawn and Garden Pumps.
Holland Patent ..List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ..new list ..35 %
Pennsylvania Pattern ..per doz 35 %

Molasses Gates.
Enterprise Mfg Co.'s Measuring Faucets ..dis 25 %
Stebbins' Gates ..dis 80%
Lincoln's " ..dis 50&10 %
Landers, Frary & Clark's Petroleum ..dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880 ..dis 40 %
Cork Lined " ..dis 70 %

Meat Cutters.—Penns'vania sleat Cutter..dis 40&10 %
Dixon's ..dis 30 %
Woodruff ..dis 30 %
Stowe ..dis 30 %
Hale's ..new list, dis 30, 10&2 cash
American ..dis 25 %
Stuffers ..dis 30 %
Enterprise Stuffers ..dis 25 %

Planes.—Ohio Tool Co ..dis 30&5 %
Scioto ..dis 40 %
Auburn ..dis 40&5 %
New York Tool Co ..dis 40 %
Bailey ..dis 20&10 %

Piano Irons.—Ohio Tool Co ..dis 20 %
Butcher's ..£, $5.50

Plumbs and Levels.
Stanley's Adjustable ..dis 65&10 %
" Non-Adjustable ..dis 65&10 %

Picks.—New list ..35 %
Pumps.—Bickford ..$5.00, dis 10 %
Rules.—Stanley Boxwood ..dis 70&10 %
Stanley Ivory ..dis 60&10 %

Steelyards.—Hart's Pattern ..dis 30&10 %

₱ doz.	$14.50	17.75	21 00	26.50	31 00	35.50
Lbs	50	100	150	200	250	300

American Pattern ..dis 30&10 %

₱ doz.	$8.00	10.25	13.75	15.50	16.75	19.50
Lbs.	50	100	140	200	250	300

Squares.
Steel and Iron ..dis 40 %; full case, dis 50&10 %
Try Squares, Stanley ..dis 50&10 %
Disston's Try Squares ..dis 40 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ..₱ doz $9.00 net
Clipper No. 10, Bronzed Blade, Boxed and Sharpened ..₱ doz $8.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened ..₱ doz $8.00 net

Saws.—Disston's Hand, Panel and Rip ..dis 20 %
Disston's Circular ..dis 40 %
Cross-Cut No. 2, Plain Tooth ..dis 40%
" Patent Tooth ..dis 40%
" Champion Tooth ..dis 40%
Boynton's Lightning Cross Cut, new list ..dis 20 %
" One Man, all lengths, " ..dis 20 %
" Billet Webs, 30 inch, " ..dis 25 %
" Lightning Buck Saws, cross bar ..dis 25 %
" " Hand, Panel and Rip ..dis 25 %

Shovels and Spades.
Oliver Ames & Sons, new list ..dis 15 %
Griffiths ..dis 40&10 %
Rowland ..dis 30&2c %

Sad Irons.—4 to 10 lbs ..₱ lb 3½c
Mrs. Potts' Patent ..dis 35 %

Stone.—Arkansas Oil Stone ..₱ lb $2.00 net
Washita Extra ..₱ lb 38c net
" No. 1 ..22½c
" No. 2 ..18c
" Slips ..45c
" Axe ..130 net
Turkey Oil Stone No. 1 ..₱ lb $1.00 net
Hindostan Oil Stone No. 1 Axe ..₱ lb 60 } dis 20 & 10 %
" Axe Stone ..50 }
" Slips ..}

Screws.
Flat Head Iron ..dis 40 %
" Brass ..dis 40 %
Round Head Brass ..dis 30 %
" Iron ..dis 35 %

Spoons.
Plated ..dis 40, 5&c %
German Silver ..dis 30, 10&c %
Britannia, Boardman's ..dis 60&5 %
" Parker's ..dis 60&5 %
Tinned ..dis 10 %

Springs.—Torrey ..₱ doz $2.10 10 %
Philadelphia ..5 in., $4.00; 8 in., $7.75 ₱ doz. dis 2& %
Chatfield No. 1, $2.75; 2, $3.25; 3, $4.00 ₱ doz. dis 33⅓ %
Gem Coil No. 1, Large Jap'd ..₱ doz $4.00 }
" No. 2, Medium Jap'd ..." 2.75 } 25&10 %
" No. 3, Small Jap'd ..." 2.00 }

Stocks and Dies. ..dis 10&5 %
Stove Polish.—Gem ..₱ gross, $4.50, dis 5 %
Dixon .." 6.00, dis 10%
Onyx ..." $4.00 @ 4.25 net

Tacks.
Shoe Nails—4-8, 5½c.; 3½-8, 10c ₱ lb ..10 %
Double Pointed Tacks ..dis 40&5 %

Traps.
Genuine Oneida—Newhouse ..dis 35 %
Im. Oneida—Newhouse list, first qual ..dis 55 %

Vises.—Solid Box, Trenton new list ..dis 35 %

Wrenches.—Agricultural ..dis 70&5 %
Coes' Genuine ..dis 50 %
" " Mechanics' ..dis 60&10 %
" " Mail. Bar ..dis 75 %
Philada. Tool Co., Duplex ..dis

Wire.
Bright or Ann'd, No. 0 to 18 ..dis 52½ to 55 %
" No. 19 to 26 ..dis 57½ to 60 %
" " No. 27 to 36 ..dis 62½ to 65 %
Coppered, 0 to 18 ..dis 47½ to 50 %
Tinned Broom Wire ..dis 52½ to 55 %
Galvanized No. 7 to 18 ..Market List, dis 42½ to 45 %

Wringers.
Peerless No. 2½ ..
" 2 ..
Universal, No. 2½ ..
" 2 ..
Novelty, No. 10 ..
" 2 ..

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

For fluctuations and discounts on card rates see weekly Pittsburgh Trade Report.

The following are card rates.

Flat Bar.

1¼ to 4 by ¾ to 1 inch ..2.50
4¼ to 6 by ¾ to 1 " ..2.60
1¾ to 6 by 1¼ to 1½ " ..2.90
1¼ and 1½ by ¾ to ¾ " ..2.60
1 and 1½ by ¾ to ¾ " ..2.70
⅝, ¾ and ⅞ by ⅜ to ⅝ inch ..2.90

Rounds and Squares.

1 to 1⅞ ..2.50 | ⅝ to 9-16 ..2.70
2 to 2⅝ ..2.70 | ½ to 7-16 ..2.90
2¼ to 3¼ ..3.00 | ⅜ " ..3.10
3⅜ to 4 ..3.50 | 4-16 ..3.30
4¼ to 5 ..4.00 | ¼ " ..3.50
¾ to ⅞ ..2.60 | 3-16 ..5.50

Oval Iron.

⅞ to 1¼ ..2.90 | ⅝ ..3.30
⅞ to ¾ ..3.10 | ⅜ ..3.70

Half Oval and Half Round.

⅞ to 1¼ inch ..2.20 | ⅝ inch ..4.00
⅞ to ¾ " ..3.70 | ⅜ " ..5.50

Horse Shoe.

⅝ to 1¼ by 5-16 to ⅞ inch ..3.50

Wagon Box Iron.

¾ Inch, Nos. 13 and 14 ..3.70
⅝ " " 11 and 12 ..3.50
⅝ " " 13 and 14 ..4.00
⅝ " " 11 and 12 ..3.80
⅝ " " 13 and 14 ..4.40
⅝ " " 11 and 12 ..4.10

Heavy Bands.

3½ to 6 by ¼ and 5-16 inch ..2.70
1½ to 3¼ by ¼ and 5-15 " ..2.70
1 to 1¾ by ¼ and 5-16 " ..2.80
¾ to ⅞ by ¼ and 5-16 " ..3.00
⅝ and ⅞ by ¼ and 5-16 " ..3.50

Light Bands.

1¼ to 6 by ¼ to 3-16 ..3.00
1½ to 6 by Nos. 11 and 12 ..3.10
1 to 1¾ by ¼ to 3-16 ..3.10
1 to 1¾ by Nos. 11 and 12 ..3.20
⅞ and 13-16 by ¼ to 3-16 ..3.40
⅞ and 13-16 by Nos. 11 and 12 ..3.50
⅝ and 11-16 by ¼ to 3-16 ..3.70
⅝ and 11-16 by Nos. 11 and 12 ..3.80
⅝ and 9-16 by ¼ to 3-16 ..4.00
⅝ and 9-16 by Nos. 11and 12 ..4.10
⅛ inch by ¼ and 3-16 ..4.20
⅛ inch by Nos. 11 and 12 ..4.40

Hoop Iron.

1¼ to 4, Nos. 13, 14 and 15 ..3.30
1¼ to 2, Nos. 16, 17 and 18 ..3.40
1¼ to 2, No. 19 ..3.50
1¼ to 2, No. 20 ..3.60
1¼ to 2, No. 21 ..3.70
1¼ to 2, No. 22 ..3.80
15-16, 1, and 1¼, Nos. 13, 14 and 15 ..3.50
15-16, 1, and 1¼, Nos. 16, 17 and 18 ..3.60
15-16, 1, and 1¼, Nos. 19 and 20 ..3.70
15-16, 1, and 1¼, No. 21 ..3.80
15-16, 1, and 1¼, No. 22 ..3.90
⅞, Nos. 13, 14 and 15 ..3.70
⅞, Nos. 16, 17 and 18 ..3.80
⅞, Nos. 19 and 20 ..3.90
⅞, No. 21 ..4.00
⅞, No. 22 ..4.10
13-16, Nos. 13, 14 and 15 ..3.90
13-16, Nos. 16, 17 and 18 ..4.00
13-16, Nos. 19 and 20 ..4.10
13-16, No. 21 ..4.20
13-16, No. 22 ..4.30
¾, Nos. 13, 14 and 15 ..4.00
¾, Nos. 16, 17 and 18 ..4.10
¾, Nos. 19 and 20 ..4.20
¾, No. 21 ..4.30
¾, No. 22 ..4.40
11-16, Nos. 13, 14 and 15 ..4.10
11-16, Nos. 16, 17 and 18 ..4.20
11-16, Nos. 19 and 20 ..4.30
11-16, No. 21 ..4.40
11-16, No. 22 ..4.50
⅝, Nos. 13, 14 and 15 ..4.60
⅝, Nos. 16, 17 and 18 ..4.70
⅝, Nos. 19 and 20 ..4.80
⅝, No. 21 ..4.90
⅝, No. 22 ..4.70
⅝, No. 23 ..4.80
9-16, Nos. 13, 14 and 15 ..4.90
9-16, Nos. 16, 17 and 18 ..4.60
9-16, Nos. 19 and 20 ..4.70
9-16, No. 21 ..4.80
9-16, No. 22 ..4.90
9-16, No. 23 ..5.00
½ inch, Nos. 13, 14 and 15 ..5.10
" Nos. 16, 17 and 18 ..4.80
" Nos. 19 and 20 ..4.90
" No. 21 ..5.10
" No. 22 ..5.00
" No. 23 ..5.30

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.

1¼ to 2 in., cut to length.

9 to 11 lbs. per set of 6 hoops ..3.50
8 lbs. and less than 9 lbs. per set of 6 hoops ..3.60
Less than lbs. per set of 6 hoops ..3.80

Extras for Cutting to Length all Preceding Iron.

All Iron, including Tire ..1.10c

Tank Iron.

No. 9 and heavier ..3.30
Plow Slabs ..3.50
" Wings ..3.80

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.40	5.00	6.50
No. 15 to 17	3.80	5.30	6.80
No. 18 to 21	4.10	5.60	7.10
No. 22 to 24	4.30	5.80	7.30
No. 25 & 26	4.40	6.00	7.50
No. 27	4.70	6.20	7.70
No. 28	5.10	6.60	8.10

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.

1st quality (A) ..10½c | 2d quality (B) ..9½c

Galvanized C. H. B.—(Charcoal Hammered Blooms.)

Nos. 14 to 20 ..12c | No. 27 ..15c
Nos. 21 to 24 ..13c | No. 28 ..16c
Nos. 25 and 26 ..14c | No. 29 ..18c
Current discount, 35 % @ 40 %.

Coal Screen Iron.

1¾ by ⅝ by 5-16 ..3.00 | 1 by ⅝ by 5-16 ..3.50

Angle Iron.

2½, 3, 3½ and 4 inch ..3.30
1⅝, 1¾, 2 and 2¼ inch ..3.40
1¼ inch ..3.40
1 " ..3.60
1¼ by 1 inch, for Plow Handles ..3.80
1½ by ¾ " " " ..3.80
1½ by ¾ " " " ..3.90

T Rail.

8 lbs. to the yard ..2.90 | 20 lbs. to the yard ..2.80
12 " " ..2.80 | 28 " " ..2.80
16 " " ..2.80 | 40 " " ..2.80

Splice Joints for 12, 16 and 20-lb. Rail, 4cc each; 28 and 30 lb. Rail, 5cc each; 40 lb., 6cc each.
3½ by ⅜ and ½ Spikes for 20 and 28-lb. Rail ..4½c
2½ and 3 by ⅜ " " 12 and 16-lb. " ..4½c
2½ by 5 16 " " 8-lb. Rail ..5½c

Flat Rails.—Punched and Countersunk.

1¼ to 2 by ⅛ to ⅝ inch ..3.00
1½ by ⅜ and 7-16 inch ..3.20
1¾ by ⅜, 7-16 and ½ inch ..3.50

Junista Nail Rods ..6.50
Norway " ..8.00
Guard Iron, ¾x⅛, ¾x⅜ and 1¼x⅛ ..4.00
" ¾x⅝-10 and ⅞x⅜ ..4.20
Drag Bars ..3.30
Dropper Bars ..3.50
Cylinder and Landside Iron ..3.20
Plow Beam Iron ..3.00

Nails.
See Pittsburgh Trade Report.

Best Quality Refined Cast Steel.
Squares, Flat, Octagon and Round.

⅜ to 2 inches, inclusive ..11c
5-16 and 2⅛ to 3 inches ..12c
¼ and 3⅛ to 4 " ..13c
7-32 and 4⅛ to 5 " ..14c
3-16 and 5⅛ to 6 " ..17c
5-32 inch ..21c
⅛ inch ..29c
Oil Well Steel Forgings ..19½c

Machinery Steel.

	Crucible.	Bessemer & Open Hearth
Ordinary Sizes, ⅜ to 2 inch		
Round	6½c	5c
5-16 and 2⅛ to 3 inches	7½c	6c
¼ and 3⅛ to 6 "	8½c	7c
7-32 inch	9½c	8c
3-16 "	11½c	10c

Square, Flat and Octagon, ½c extra throughout the list.
Cut to specified lengths, ½c extra.

Hammer Cast Steel.

2 inches and under ..7 c
Above 2 inches ..8 c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge	11c	9c	7½c	6c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.

Auger and Auger Bit ..7c
Axle Steel for carriages and wagons ..7c
Frog Points and Plates ..7c
" Side Bars ..8½c
Pick, plain ..7c
" and Mattock, beveled ..7½c
Skate Steel ..7½c
Table Cutlery ..7c
Pike and Cant Hook ..7½c
Coal and Granite Wedge ..7½c
Roller ..8½c
Spindle, subject to Machinery classification ..6c
Trap Spring Steel ..7c
Forged Crank Pins and Lathe Spindles ..8c
Piston Rods, plain ..9c
" forged to shapes ..6½c
Slide Bars, plain ..9c
" forged to shapes ..6½c

Crucible, Open Hearth or Bessemer.

Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick ..6½c
Boiler, Fire-Box and Flue Sheets, not less than ⅛ thick ..7c
Circulars and semi-circulars, when ordered separately ..8c
Smoke Stack, to shape ..8c
Locomotive Tank Steel ..7c

File Cast Steel.

Square, Round, Half Round and Flat Bastard, 8-inch and over ..8c
Mill Saw, 8-inch and over ..8½c
Taper, 3/4-inch and over ..9½c
Horse and Shoe Rasp ..8½c

Spring Cast Steel.

Spiral and Taper, cut to lengths ..6½c

Tire Cast Steel.

1x¼ and over ..7c
1x3-16, ⅞x3-16 and ¼ ..7½c
1 and 1⅛-16x⅛ and 5-32, ⅞x3-16 and 5-32 ..8c
⅝ and ⅝x⅛ and 3-32 and 12 g ..8½c
Solid Safe Cast Steel ..9c

Agricultural Implement Cast Steel.

Fork and Rake, Crucible ..7c
Horse Rake Steel, cut to lengths, Crucible ..7c
Hoe, Crucible ..7½c
Corn Stalk Cutter, beveled ..6½c
Beveled Hoe and Shovel Steel in Bars ..7½c
Crucible Plow Steel in slabs ..7½c

Bessemer and Open Hearth.

Spring ..4½c
" spiral and taper, cut to lengths ..5½c
Tire, 3-16 thick and above ..4½c
Toe Calk ..4½c
Plow ..4½c
Axle Billets ..4½c
Sleigh Shoe ..4c
Cutter Shoe, cut to lengths and tapered ..5½c
Scythe Back Steel ..7½c
Grain Drill Bars ..4c
" Points ..7½c
Rolling Coulter Blanks, cut and punched ..8½c
Thrasher Steel ..9½c
" Teeth ..4½c
Rolled Hammer Billets ..5½c

Terms.—Four months; 3 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.

Furnace, Floor and Straightening Plates ..2½c
Housings and Castings not otherwise specified ..3 c
Guide Plates ..3½c
Spindles and coupling boxes ..3 c
Sand Rolls and Pinions, large size ..3 c
" small size ..3½c
Pipe Mill Castings ..5 c
Rolling Mill Castings under 50 lbs ..4 c
Spur and Bevel Wheels, large ..3½c
" small ..3½c
Pulleys up to 30 inches ..4½c
" over 30 inches ..4½c
Engine Castings, light ..4½c
" heavy ..4 c

Chilled Rolls.

6 to 7 in. diam., 7 to 20 in. long ..4½c
8 to 15 in. " 8 to 40 in. " ..4½c
25 to 24 in. " 15 to 72 in. " ..4½c
14 to 31 in. " 72 to 108 in. " ..4½c

White and Red Lead.

Strictly Pure White Lead in Oil, in kegs, 7c.; in 25 ℔ Tin Pails, 5c. ₱ lb over keg price; 12½ ℔ Tin Pails, 7c ₱ lb over keg price; assorted, 1 to 5 ℔ cans, 3c. per ℔ over keg price.
Dry White Lead ..7c
Red Lead, very brilliant, in kegs, 7c; in barrels 6¾c
Litharge (Potter's Lead) " 7c; " 6¾c
Freights equalized with all points.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 2½ per cent. will be allowed, but not otherwise.

Window Glass.

Per Box of 50 Feet.—Discount 60&10 % on single strength, 60&20 % on double.

Single Strength.

Size.	AA.	A.	B.	C.
5 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14 50	12.00	
30 x 56 to 34 x 50	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
35 x 60 to 40 x 60	20.75	18.75	17.25	

Double Strength.

6 x 8 to 10 x 15	13.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	26.75	25.25	19.25	
30 x 56 to 34 x 50	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 81 united inches bracket.

BOSTON.

Reported by Macomber, Bigelow & Dowse.

Anvils.—"Eagle American".....₩ ℔ 9½c. dis 20 %
Anvil & Vise.—
No. 1, $5.25; 2, 4.25; 3, 3.50 each.....dis 25 %
Augurs & Bitts.—Snell's Auger.....dis 40&10 %
L'Hommedieu's Ship Auger.....dis 15 %
Jenning's Bitts.....dis 10&10&10 %
Cook's Bitts.....dis 40&10 %
Sheparuson's Double-Cut Bitts.....dis 45 %
" " Gimlets.....dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ₩ doz. $48.00, No. 3, ₩ doz. $60.00 list, dis 20 %
Bonney's Extension Hollow Augers....₩ doz $36.00
Pierce's Bitts.....dis 40 %
Griswold " .....dis 40&10 %
Axes.—Blue Jackets.....per doz 9.00
Red Cross.....per doz 8.00
" Handled.....per doz 12.00
Dowse " Boys'.....dis 33⅓ %
Ax Handles.—
Oak Extra, 31 in., No. A.....₩ doz $2.15
" 34 in., No. A.....₩ doz 2.36
" 31 in., No. B.....₩ doz 1.75
" 34 in., No. B.....₩ doz 2.00
" 31 or 34 in., No. C.....₩ doz 1.25
Axle Clips.....dis 50 %
Balances.—Chatillon's.....dis 15&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers).....per ft. 20
" Half-Round.....per ft, ⅝, 30; ¾, 40
Wrought " .....per ft, ⅝, 30; ¾, 40; ⅞, 50
Bells.—Connel's Crank Gong reduced list..dis 20&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1879.....dis 40 %
Brass " " 1879.....dis 33⅓ %
Blind Fasts.—Lock Fasts.....₩ C sets $4.00
No. 6 Fasts.....₩ C sets 4.00
Veazie Fasts.....₩ C sets 6.50
Shedd's.....₩ C sets 7.00
Blind Hinges.—Mall. Hook, 3 holes....₩ C sets 5.00
Brad Awl Handles.—
Phœnix Adjustable.....₩ doz $2.00
Belts.—Norway Iron Carriage.....dis 70&5 %
Common " .....dis 80 %
Borax.—Refined.....₩ ℔ 14c
Boring Machines.
Eagle Upright each, $5.50 list } dis.40&10%
Eagle Angle each, 6.75 list }
Snell Augers.....₩ set 2.43
Braces.—Barber's.....dis 40& 5 %
Spofford's.....dis 50 & 5 %
Backus'.....dis 50 & 10 %
Bracket Saws.—Holly Scroll Saw.....each, $2.40
Demas Lathe and Scroll Saw....." 6.40
Bracket Saws, extra quality, to No. 4.....₩ gro $0.75
Steel Frame, with patterns.....₩ doz 6.40
Lester.....dis 20 %
New Rogers, all iron.....dis 25 %
Bracket Saw Blades.
Griffith's patent.....₩ gross 75c
Brackets.—R. I. & M. Flower Pot reduced list—
.....dis 30&10 %
Bronzed Shelf, R. B. & D. newlist.....dis 40&10 %
Store Shelf.....dis 40&10 %
Bronze Hardware.—
Butts.—Union Fast Joint.....40&10&10 %
" Loose " .....dis 50&10&10 %
" Japanned Acorn.....dis 60&10&10 %
" Silvered " .....dis 50&10&10 %
" Boston Finish.....dis 75&10 %
Union Spiral Spring.....dis 25&10 %
Wrought Brass.....dis 75 %
Carriage Bolts.—Eagle Norway.....dis 70& 5%
Common.....dis 80&5 %
Carriage Jacks.
"Climax" No. 1.....₩ doz $30.00
" No. 1½....." 14.00
" No. 2....." 13.50
"Universal".....dis 25 %
" No. 1.....each, $3.00
" No. 2....." 3.00
" No. 3....." 6.00
" No. 4....." 6.00
" No. 5....." 6.50
Cartridges.—U. S. Cartridge Co.....dis 70 %
Cards.—Watson's make, Horse and
" Curry.....dis 10 % } New List,
" Cotton.....dis 10 % } July 1881.
" Wool.....dis 10 % }
Casters.—Bed and Table.....dis 50 %
Chain.—Traces 6½, 10, 4, straight.....₩ pair 450
" 6½, 10, 4, twisted.....₩ pair 500
" 7, 12, 3, " .....₩ pair 750
Coil ¾-16.....₩ ℔ 11 c
" ¼.....₩ ℔ 8 c
" 5-16.....₩ ℔ 7 c
" ⅜.....₩ ℔ 6 c
" 7-16.....₩ ℔ 5½c
" ½.....₩ ℔ 5½c
Chalk.—White, Carpenter's.....₩ gross 600
Red, Carpenter's.....₩ gross 800
Blue.....₩ gross $1.00
Chisels.—Hart, Bliven & Mead, Framing.....dis 50&10&10 %
Underhill, Framing.....dis 25 %
Buck's Chisels.....dis 30
Clothes Line.—
Galvanized Wire, 100 feet each.....₩ doz $4.00
Coal Hods.—"Dover."—Galvanized, new list..dis 50 %
Japanned, new list.....dis 50 &10%
Coffee Mills.—New list.....dis 33⅓ & 10 %
Copper Rivets......dis 33⅓ %
Cow Ties......dis 40 %
No. 30, 3 ft. No. 6 Wire, with toggle.....₩ doz $2.30
No. 35, 3 ft. " " with snap.....₩ doz 4.00
No. 40, 3½ ft. " " with toggle.....₩ doz 4.20
No. 45, 3½ ft. " " with snap.....₩ doz 4.50
No. 50, 4 ft. No. 4 " with toggle.....₩ doz 4.75
No. 55, 4 ft. " " with snap.....₩ doz 5.00
No. 60, 4½ ft. " 3 " with toggle.....₩ doz 5.60
No. 65, 4½ ft. " " with snap.....₩ doz 6.80
Cocks.—Brass, L. F. & C.....dis 45 %
Cordage.—Manila, usual trade dis to.....₩ ℔ 14½
Jute.....₩ ℔ 9c
Crow-Bars. Cast Steel.....₩ ℔ 8c
Iron Steel Pointed.....₩ ℔ 6c
Cutlery.—Pocket, American Shear Co.'s.....dis 40 %
Butcher Knives, "Woods." Lap Bolster.
Square Handle.....dis 30 %
Steak Knives.....dis 30%
Lap Bolster, Oval Handle.....dis 30 %
Sticking.....dis 30 %
Skinning.....dis 30 %
Butcher, Common Round Handle, "Woods"...dis 20 %
Shoe Knives, "Woods".....dis 20 %

Dividers.—Cook's.....dis 25 %
Dog Collars......dis 20 %
Dog Muzzles.—Automatic.....dis 15 %
Door Springs.—Torrey's Rod.....₩ doz $3.00
Imitation Torrey's Rod.....₩ doz $1.75
Gem Coil, new list.....dis 33⅓ %
Crown.....₩ doz $1.25
Warners.....₩ doz $2.00
Door Stops.—"Thurston's".....dis 50 %
Drawer Knobs.—"Thurston's".....dis 50 %
Drills.—Morse Bitt Stock.....dis 25 %
Morse Straight Shank.....dis 20 %
Emery.—Wellington Mills.....₩ ℔ 10c
Walpole Emery Mills.....₩ ℔ 6c
Turkish in 10 ℔ cans.....₩ ℔ 8c
Enamelled Ware.
Standard Mfg. Co. Kettles.....dis40 &10 %
" Sauce Pans.....dis 25 %
Felloe Plates.—Wrought.....₩ ℔
Files.
American File Co.....dis 40%
Nicholson " .....dis 40
Fluting Machines.
Knox list, $1.00.....dis 20 %
American list, $3.40.....dis 20 %
Forks. W. C. & Co., Manure.....dis 50 %
Gimlet Bitts.
Genuine German, No. 135, 1-32 to 8-32, per doz $1.00
Pierce's.....per doz 880
Glass Cutters.
Combination Class Cutter and Knife Sharpener.....₩ doz $1.0
Grub Hoes.—K. P. & Co.'s No. 2, 11.50 ₩ doz.dis 35 %
Hammers.—Maydole's.....dis 15 %
Hartford Hammer Co.....dis 20 %
Hangers & Rollers.—Anti-Friction.....dis 50&10 %
Acme Rollers.....dis 50 %
Climax.....dis 50 %
Common Hangers.....dis 50 %
" Rollers.....dis 50 %
Hand Screws......dis 10 %
Hatchets.—C. F. Dowse new list.....dis 33⅓ %
Underhill.....dis 25 %
Hay Knives.—Lightning.....₩ doz $18.00 net
Fisher's Patent.....₩ doz @14.00
Hinges.—Strap and T (new list).....dis 50&10&10 %
Providence Plate.....₩ ℔ 4½
Wrought Screw Hook.....₩ ℔ 4 %
Hoes.—W. C. & Co.'s.....dis 50
Hooks and Staples.—Brewers'.....new list, dis 70 %
Horse Nails. No. 6 7 8 9
National Finished.....25 .21 .20 .19....dis 20 %
Putnam Pointed.....28 .26 .24 .24....10&10 %
Horse Nails.—Bridgewater.....dis 25 %
No. 6 28; No. 7, 21, No. 8, 20; No. 9, 19.
Ice Cream Freezers.—Packer's, new list dis 40&10 %
Knobs.—"Norwalk." New list.....dis 45 %
Silver Glass.....dis 50&10 %
" Bell Pulls.....dis 50&10 %
Lanterns.—Guarded No. 99.....₩ doz 7.00
Tubulars, No. 0.....₩ doz 8.00
Railroad, Oil, No. 45.....₩ doz 9.00
Triangular.....₩ doz 4.00
Harricane.....dis 20 %
Lawn Mowers.—The "Daisy."
12 in. cut.....each, $8.50
14 in cut....." 9.00
16 in. cut....." 9.50
18 in. cut....." 10.00
Lead.—Sheet.....₩ ℔ 7¾c
Pipe.....₩ ℔ 7 c
Locks.—Norwalk Genuine Bronze Goods.....dis 45 %
Eagle Cabinet.....dis 25 %
" Trunk.....dis 15 %
W. Wilcox & Co., Padlocks.....dis 40 %
Manure Forks.—W. C. & Co.....dis 50 %
Mattocks.—K. P. & Co., Long Cutter, 16.00 ₩ doz.
.....dis 35 %
K. P. & Co., Short Cutter, 15.00 ₩ doz.....dis 35 %
" Pick " 15.00 ₩ doz.....dis 35 %
Measuring Tapes.—Eddy's.....dis 20
Meat Cutters.—Miles' Challenge.....dis 30 %
Hale's, (New list).....dis 40 & 10 %
American.....dis 25 %
Money Drawers.—Tucker's Alarm.....₩ doz $22.50
Mouse Traps.—Delusion.....₩ doz 2.00
Novelty.....₩ doz 75
Nails......₩ keg, 3.50
Oilers.—Zinc and Tin.....dis 50 %
Brass and Copper.....dis 40 %
Ox Bows.—Extra finished and varnished.....dis 10 %
1¼ in., ₩ doz. pair..$7.00 | 2 in., ₩ doz. pair....$10.00
1½ in., " " .. 9.00 | 2½ " 12.00
Padlocks.—W. Wilcox & Co.'s.....dis 40 %
Paper.
Tarred Sheathing.....₩ ℔, 2¼c
Tarred Eagle Brand.....₩ ℔, 2½c
Picks.—K. P. & Co., Adze Eye, 5 to 6 ℔ $12.00.....dis 35 %
" " 6 to 7 ℔ 13.00.....dis 35 %
Planes.—Auburn Tool Co.....dis 40 %
Fancy Planes.....dis 25 %
Razee " .....dis 30 %
N. Y. Tool Co.....dis 40 %
English Iron.....dis 30%
Bailey's.....dis 20&10 %
Plated Ware.—Rogers & Bro.....dis 10&5 %
Pliers.—Vom Cleff & Co.'s.....net list
Button's Wire Pliers.....dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co..dis 5&10 %
Pocket Knives.
American Shear Co.'s.....dis 40 %
Potato Diggers.—W. C. & Co. reduced list...dis 40 %
Pulleys.
Acme or Excelsior, 1¾ in.....per doz 220
" " 2 in.....240
Pulley Blocks.....dis 40 %
Pumps.—Union Manufacturing Co.
Iron Cistern.....dis 50 %
" Pitcher Spout.....dis 50 %
Copper.....dis 30 %
Rivets.—Black.....dis 60 %
Carriage in 10 ℔ papers.....dis 35 %
Copper.....dis 33⅓ %
Razors.—Torrey's.....dis 40 %
Razor Strops.—Torrey's.....Full line
Rules.—Stanley.....Boxwood, dis 70&10 %
" Ivory, dis 60&10 %
Sadirons.—Common.....₩ ℔ 3½c
Laundry.....₩ ℔ 6½c
Tailor's Geese.....₩ ℔ 6 %
Enterprise, "Potts".....dis 35 %
Sash Locks.—King & Hutchinson's, new list. dis 40 %
Sandpaper.—Baeder & Adamson.....dis 25 %
M. B. & D.....dis 25&5 %
Sash Weights.—Patent Eye.....₩ ℔ 1¾c
Saws.—Hand Saws, Disston's.....dis 20 %
Wheeler & Clemson.....dis 20 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1.....₩ foot 35c
" " Champion " .....₩ foot 35c
Disston's, Common " .....₩ foot 50c dis 40%
" Gt. American " .....₩ foot 65c dis 40%
Boynton's Lightning " .....₩ foot 45c
M. B. & D., Hand Saws.....dis 25 %
W. M. & Co.'s. Circular Saws.....dis 35 %
Richardson Bros.....dis 25 %
Saw Blades.—Disston.....dis 20 %
W. M. & C.....dis 10 %
Welch & Griffith, Extra.....₩ doz $8.40
" No. 2.....₩ doz 7.00
Scales.—Fairbanks.....dis 20 %
Screws.—Aiken's Flat-Head Iron....new list, dis 40 %
American Flat-Head Iron.....dis 40 %
" " Brass.....dis 40 %
" Round-Head " .....dis 30 %
" " Iron " .....dis 35 %
Grilley " Nickel-plated Common.dis 40 %
Scythes.—Clippers, in boxes.....₩ doz $9.00
Shaves.—Kimball's.....₩ inch 75c
Watrous.....dis 15 %
Shears.—American Shear Co., new list.....dis 70 %
Shot.—Tatham's.....₩ ℔ 7c
Shovels.—O. Ames, new list.....dis 15 %
O. Ames, other brands, new list.....dis 15 %
M. B. & D.....dis 15 %
Oxford Birmingham Pattern.....dis 25 %
Sinks.—Magee Patent.....dis 30%
Snow Shovels.—Malleable tips.....$4.00
Skates.—Union.....dis 25 %
Acme.....dis 25 %
Imperial Club list No. 5, $5.75 per pair, list No. 7, 5.00 per pair.....dis 25 %
Stock and Dies.—Bung's.....dis 10&5 %
Tanks.—A. Field & Son s.....dis 30&5 %
Pittsfield.....dis30&10 %
Swedes Tinned.....45&10 %
Swedes Iron.....30&10 %
Gimp and Lace.....30&10 %
Copper Tacks.....30&10 %
All balances on list.....25&10 %
Traps.—Oneida, Genuine.....dis 33⅓ %
Oneida, Imitation, H. & N.....dis 50 %
Blake's.....dis 40 & 10 %
Vises.—Simbson's Adjustable.....dis 25&5 %
Howard Vise Co.....dis 25 %
Prentiss'.....dis 20 %
Weather Strips.—Packer's.....₩ doz $4.50
Browne's Flexible Rubber.....dis 30 %
In 25 feet boxes; No. 1, ⅛ in. wide, ₩ yard 10c. No. 2, ⅜ in., 15c. No. 3, ¾ in., 20c.; No. 4, 1 in., 25c.
Black Walnut Spring Weather Strips....₩ doz. $3.50
Window Springs......dis 20 %
Babcock's No. 3.....₩ gross $6.00
" " 4.....₩ gross 4.50
Wire Cloth.—"Clinton".....₩ ft 3 c
Wire Fence.
Scutt's Patent, Painted.....₩ ℔ 8½c
" Galvanized.....₩ ℔ 9½c
Wire Goods.—Gate Hooks and Eyes, &c., new list.....dis 65&10 %
Wrenches.—A. G. Coe's.....dis 50 %
Girard Mfg. Co.....dis50 %
Girard Agt.....dis 70 %
Wringers.
Universal, No. 2½.....₩ doz 44.00
Novelty, No. 2.....₩ doz 44.00
Excelsior, No. A.....₩ doz 66.00
" No. B.....₩ doz 72.00
" No. CC.....₩ doz 105.00
Novelty Set Tub, E.....₩ doz 57.00
Eureka.....₩ doz 39.00
Keystone, Wood Frame No. 1½.....₩ doz 40.00
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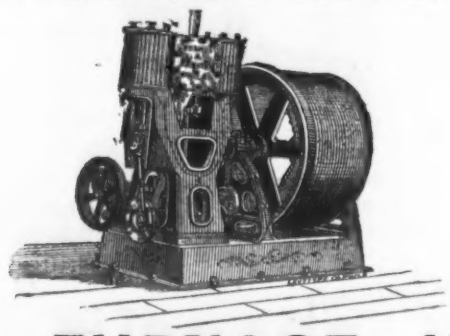

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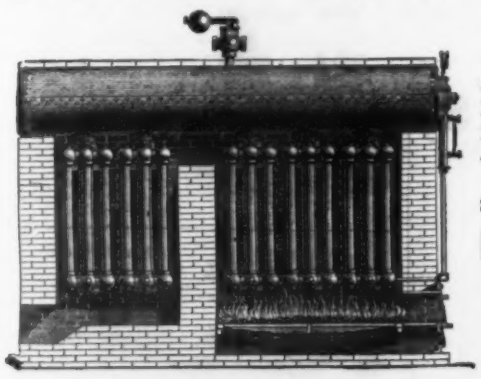

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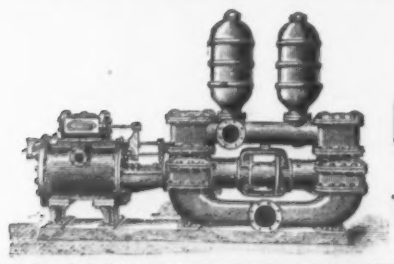

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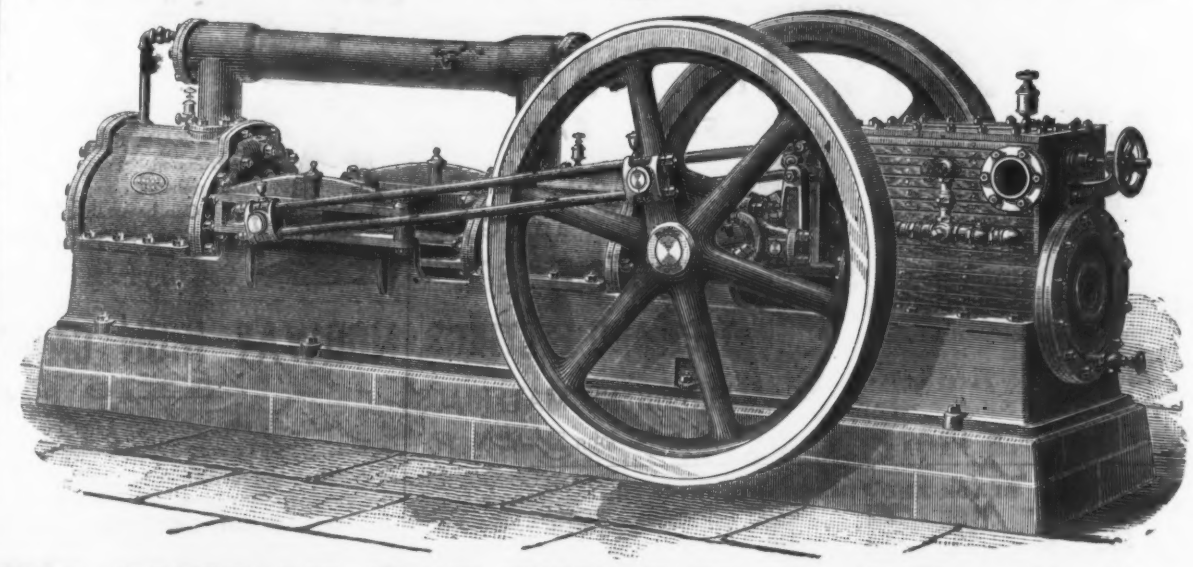

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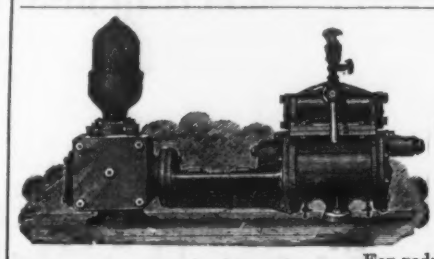

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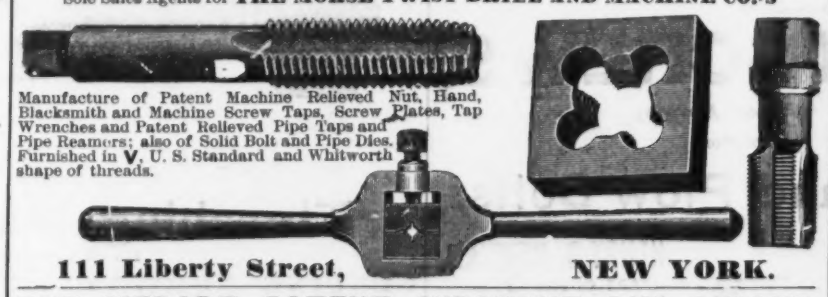

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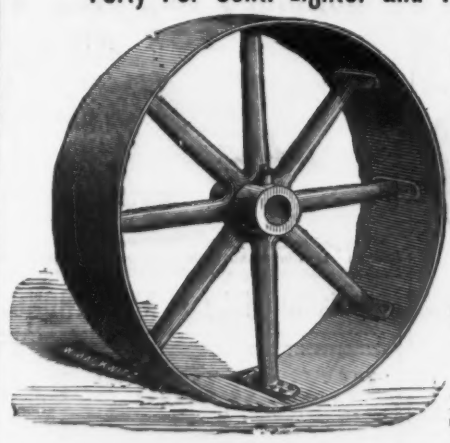

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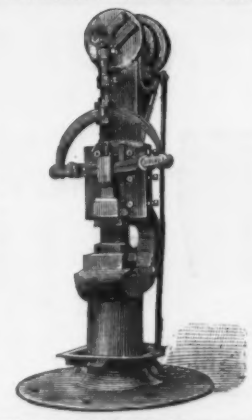

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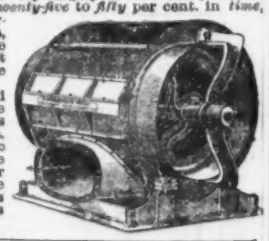

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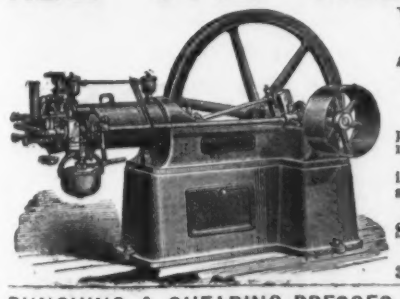

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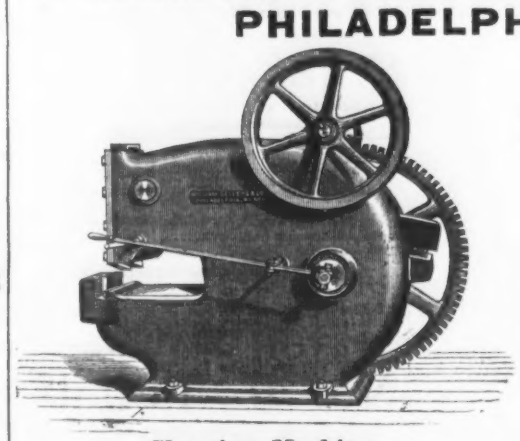

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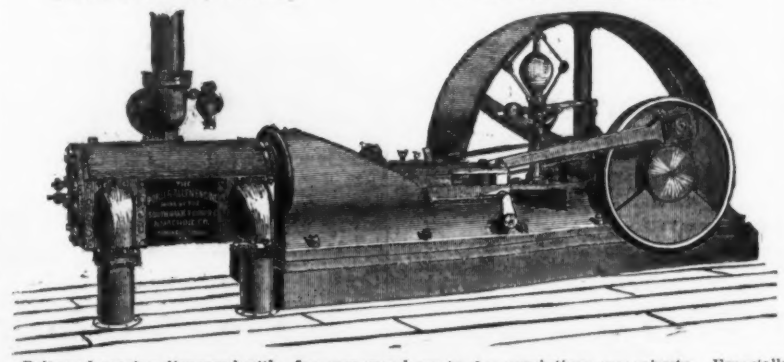

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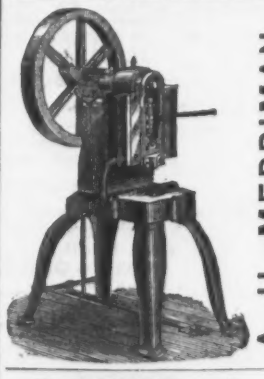

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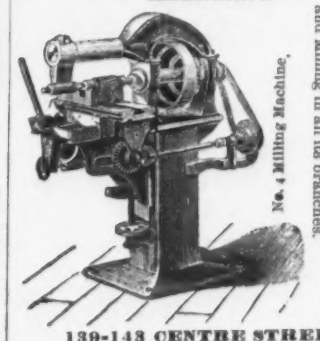

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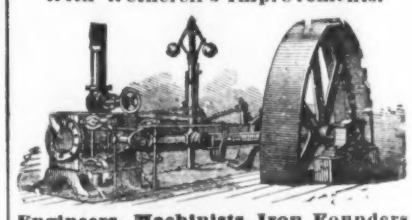

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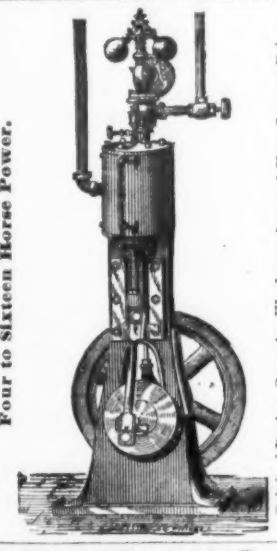

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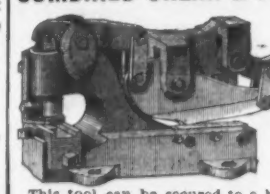

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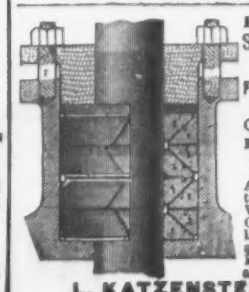

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